LG

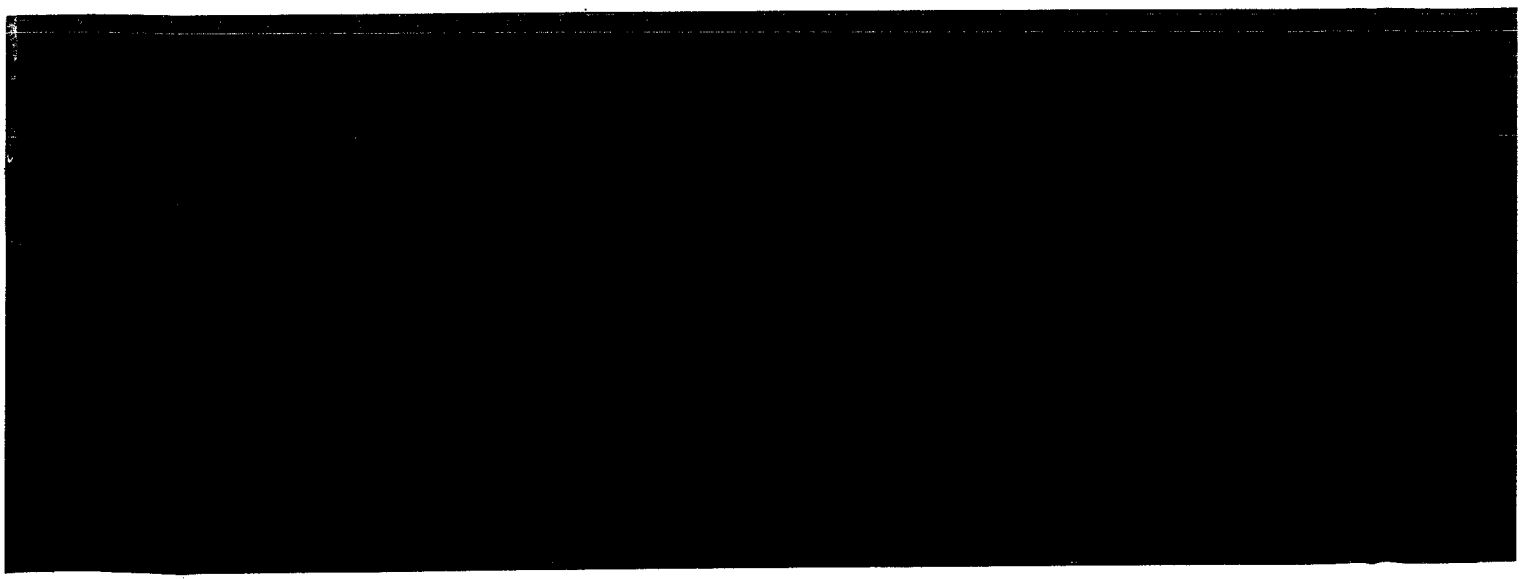
MICROWAVE/GRILL CONVECTION OVEN

SERVICE MANUAL

MODEL : MC-924JL

CAUTION

BEFORE SERVICING THE UNIT, READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



SAFETY PRECAUTIONS

This device is to be serviced only by properly qualified service personnel.
Consult the Service Manual for proper service procedures to assure continued safety operation and for precautions to be taken to avoid possible exposure to excessive microwave energy.

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

A) Do not operate or allow the oven to be operated with the door open.

B) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary; (1) Interlock operation, (2) proper door closing, (3) seal and sealing surfaces (arcing, wear, and other damage), (4) damage to or loosening of hinges and latches, (5) evidence of dropping or abuse.

C) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.

D) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.

E) A microwave leakage check should be performed on each oven prior to release to the owner.

CAUTION
MICROWAVE RADIATION

DO NOT BECOME EXPOSED TO RADIATION FROM THE MICROWAVE GENERATOR OR OTHER PARTS CONDUCTING MICROWAVE ENERGY.

TABLE OF CONTENTS

(Page)

SAFETY PRECAUTIONS ..... **Inside front cover**

SPECIFICATIONS 1-1

CAUTIONS 2-1

INSTALLATIONS 3-1

OPERATING INSTRUCTIONS 4-1

FEATURES 4-1

CONTROL PANEL 4-1

OPERATING SEQUENCE 4-2

SCHEMATIC DIAGRAM 4-3

CIRCUIT DESCRIPTION 4-4

SERVICE INFORMATION 5-1

TOOLS AND MEASURING INSTRUMENTS 5-1

MICROWAVE LEAKAGE TEST 5-1

MEASUREMENT OF MICROWAVE POWER OUTPUT 5-3

DISASSEMBLY AND ADJUSTMENT 5-3

INTERLOCK CONTINUITY TEST 5-8

COMPONENT TEST PROCEDURE 5-9

TROUBLE SHOOTING GUIDE 5-14

EXPLODED VIEW 6-1

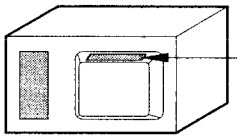
REPLACEMENT PARTS LIST 7-1

SCHEMATIC DIAGRAM OF P.C.B. 8-1

PRINTED CIRCUIT BOARD 8-2

PCB PARTS LIST 9-1

SPECIFICATIONS

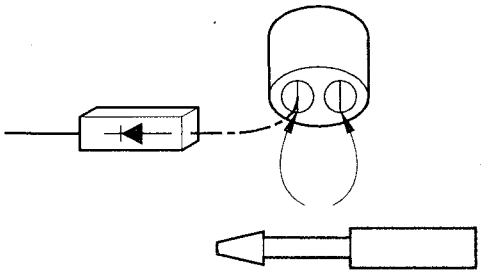
ITEM	DESCRIPTION
MODEL	**MC-924JL**
Power Requirement	230V AC 50Hz Single phase, 3 wire grounded Microwave .....1300W Grill.....1350W Convection .....1700W Combination.....1700W
Power Output	900W full microwave power(IEC705)
Microwave Frequency	2,450MHz
Magnetron	2M246, 2M248J
Timer	99min. 50sec
Outside Dimensions	574(W) X 378(H) X 508(D)
Cavity Dimensions	387(W) X 276(H) X 387(D)
Net Weight	23.5kg
Shipping weight	26kg
Control Complement	Microwave Power for Variable Cooking Power level HIGH.....Full power throughout the cooking time(100%) MED-HIGH .....approx. 80% of Full power MEDIUM.....approx. 60% of Full power DEFROST .....approx. 40% of Full power LOW .....approx. 20% of Full power • Convection - Max. 250°C • Grill • Combination
Name Plate Location	 **Back Side**
Accessories	Owner's manual — Glass tray Rotating ring — Convection rack Grill rack — Metal tray
This microwave oven is designed for household use only. It is not recommended for commercial purpose.	

CAUTIONS

Unlike other appliances, the microwave oven is high-voltage and high-current appliance.

Though it is free from danger in ordinary use, extreme care should be taken during repair.

- DO NOT operate on a 2-wire extension cord during repair and use.
- NEVER TOUCH any oven components or wiring during operation .
- BEFORE TOUCHING any parts of the oven, always remove the power plug from the outlet.
- For about 30 seconds after the oven stop, an electric charge remains on the high voltage capacitor. When replacing or checking, you must discharge the capacitor by shorting across the two terminals with an insulated screwdriver.



- Remove your watches whenever working close to or replacing the Magnetron.
- NEVER operate the oven with no load.
- NEVER damage the door seal or front plate of the oven cavity.
- NEVER put iron tools on the magnetron.
- NEVER put anything into the latch hole and the interlock switches area.

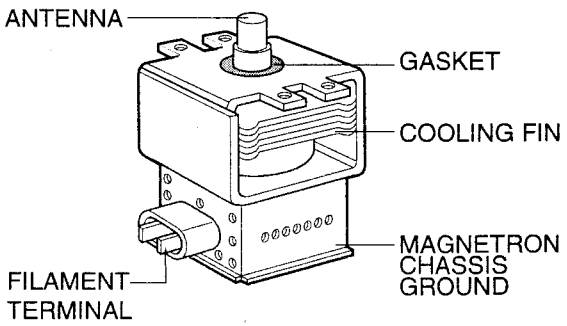
MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from the magnetron or other microwave generating device if it is improperly used or connected.

All input and output microwave connections, waveguide,flange and gasket must be secure never operate the device without a microwave energy absorbing load attached.

Never look into an open waveguide or antenna while the device is energized.

- Proper operation of the microwave oven requires that the magnetron be assembled to the waveguide and cavity. Never operate the magnetron unless it is properly installed.
- Be sure that the magnetron gasket is properly installed around the dome of the tube whenever installing the magnetron .



MAGNETRON

THE OVEN IS TO BE SERVICED ONLY BY PROPERLY QUALIFIED SERVICE PERSONNEL.

INSTALLATIONS

BEFORE YOU BEGIN, READ THE FOLLOWING INSTRUCTIONS COMPLETELY AND CAREFULLY.

Installing microwave oven

1. Empty the microwave oven and clean inside it with a soft, damp cloth. Check for damage such as misaligned door, damage around the door or dents inside the cavity or on the exterior.
2. Put the oven on a counter, table or shelf that is strong enough to hold the oven, food and utensils you put in it. (The control panel side of the oven is the heavy side. Use care when handling.)
3. Do not block the vent and the air intake openings. Blocking vent or air intake openings can cause damage to the oven and poor cooking results. Make sure the microwave oven legs are in place to ensure proper air flow.
4. The oven should not be installed in any area where heat and steam are generated, because they may damage the electronic or mechanical parts of the unit.
   Do not install the oven next to a conventional surface unit or above a conventional wall oven.
5. Use the microwave oven in an ambient temperature of less than 104°F (40°C).
6. Place the microwave oven on a sturdy and flat surface, at least 10cm(4 inches) from the wall.
7. Place the microwave oven as far away as possible from TV, RADIO, COMPUTER etc, to prevent interference.
8. This oven must be plugged into a 15A outlet.
9. Do not touch the front glass during or after cooking of the Grill, Convection and Combination mode. This glass is very hot during heater operating.
10. Do not operate oven at microwave and combination mode with the Convection rack or Grill rack placed in the cavity when the oven is empty.

Earthing Instructions

This microwave oven is designed to be used in a fully earthed condition.
It is imperative, therefore, to make sure it is properly earthed before servicing.

WARNING-
THIS APPLIANCE
MUST BE EARTHED

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Green-and-yellow:	**Earth**
Blue:	**Neutral**
Brown:	**Live**

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows.

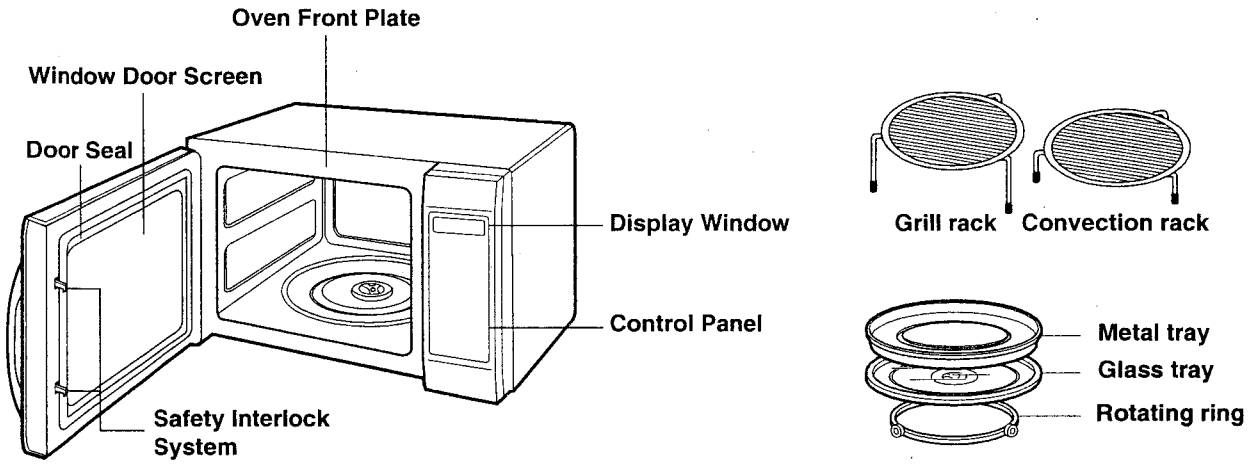
The wire which is coloured **green-and-yellow** must be connected to the terminal in the plug which is marked with the letter **E** or by the **earth symbol (b)** or coloured **green** or **green-and yellow.**

The wire which is coloured **blue** must be connected to the terminal in the plug which is marked with the letter **N** or coloured **black.**

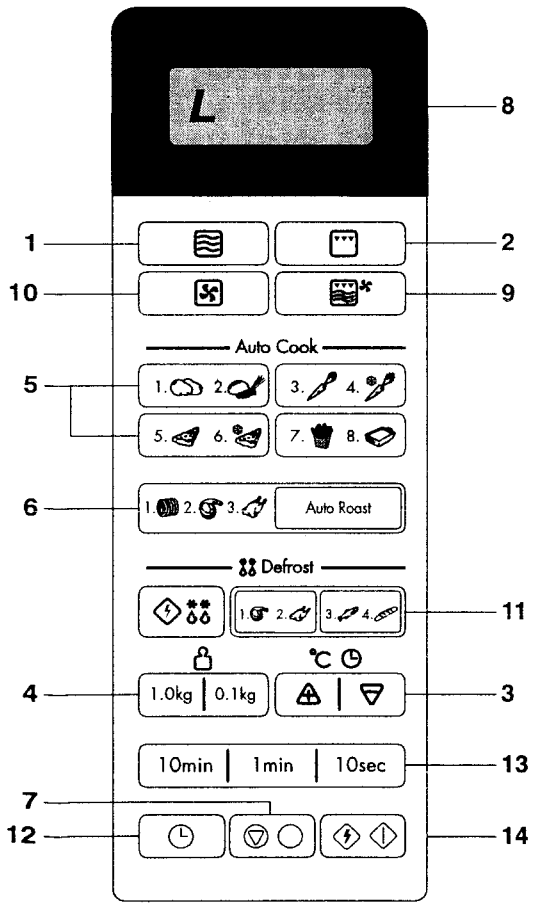
The wire which is coloured **brown** must be connected to the terminal in the plug which is marked with the letter **L** or coloured **red.**

OPERATING INSTRUCTIONS

Features



Control Panel

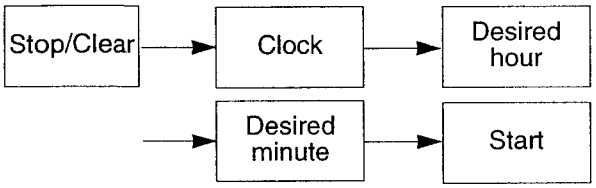


1. **MICRO POWER:** To select micro power cooking and cooking power levels.
2. **.. Grill:** To select grill cooking.
3. **MORE/LESS:** To select convection temperature, and change cooking time.
4. **WEIGHT:** To set weight of food auto weight defrost.
5. **AUTO COOK:** To select auto cook.
6. **AUTO ROAST**
7. **STOP/CLEAR, CHILD LOCK:** Stops the oven and clear all entries except the time of day.
8. **DISPLAY WINDOW:** Used to show Time of day, Cooking of day, Cooking power level, Cooking category.
9. **COMBINATION:** To select combination cooking.
10. **CONVECTION:** To select convection cooking.
11. **AUTO WEIGHT DEFROST:** To select auto weight defrost.
12. **CLOCK:** To set the time of day.
13. **TIME:** To set cooking times.
14. **START/QUICK START:** To quickly set the cooking time directly.

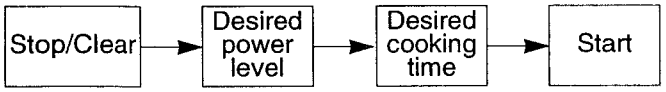
Operating Sequence

The following is a description of component functions during oven operation.

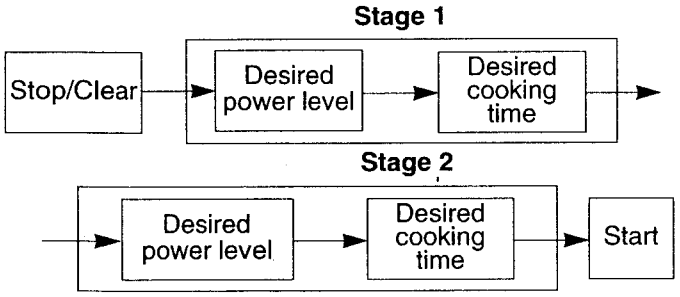
1. SETTING THE CLOCK



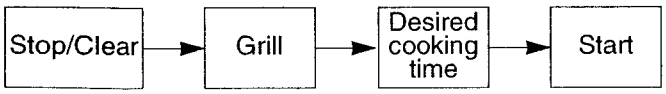
2. MICROWAVE COOKING



3. MULTI STAGE COOKING

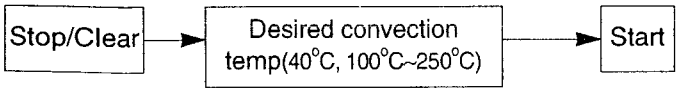


4. GRILL COOKING

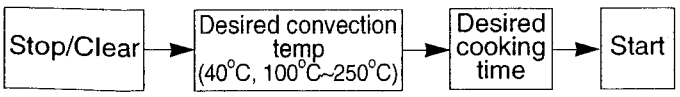


5. CONVECTION COOKING

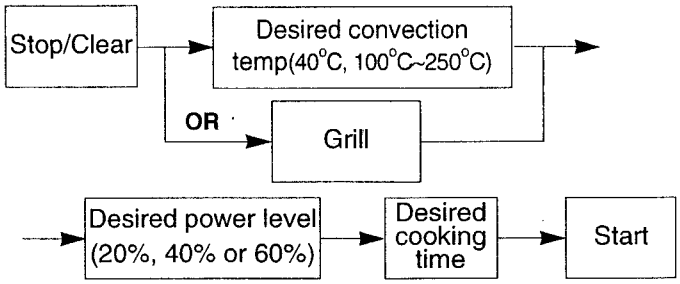
To pre-heat



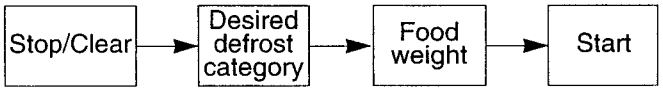
To cook



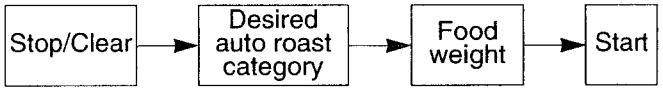
6. COMBINATION COOKING



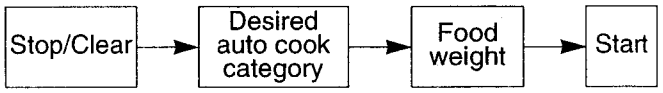
7. AUTO WEIGHT DEFROST



8. AUTO ROAST



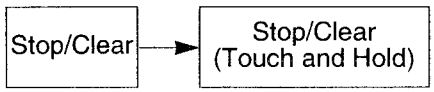
9. AUTO COOK



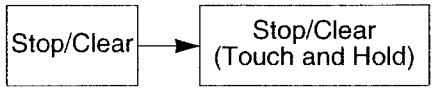
10. CHILD LOCK

This oven has a CHILD LOCK feature.

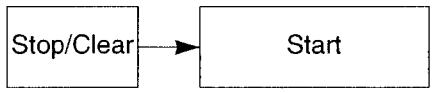
To Set CHILD LOCK



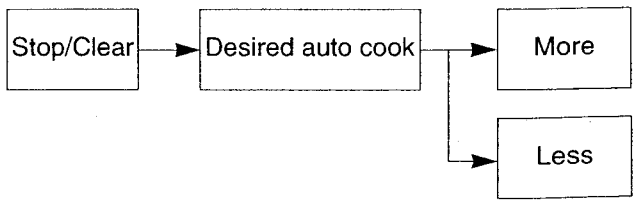
To Cancel CHILD LOCK



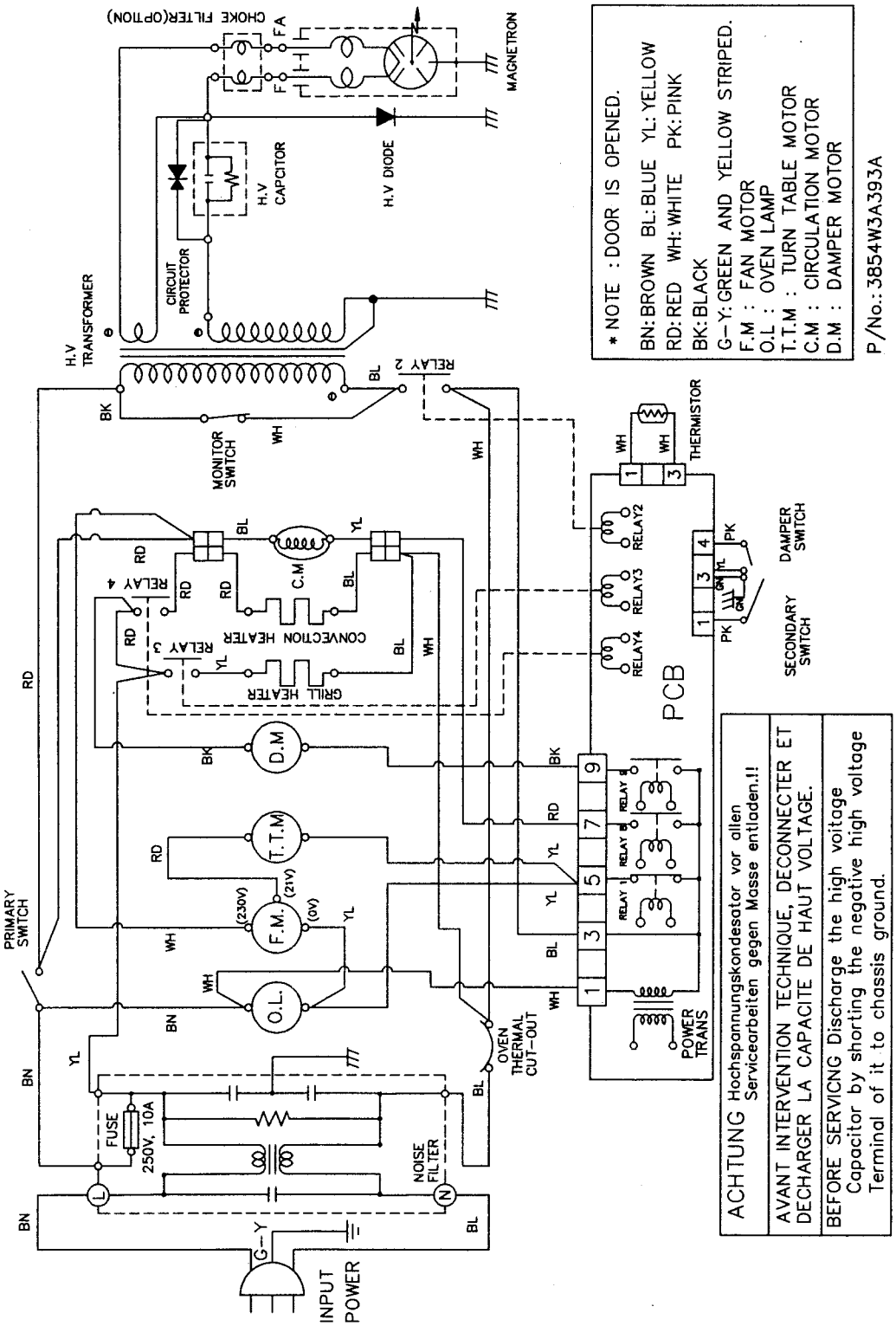
11. QUICK START



12. MORE AND LESS



SCHEMATIC DIAGRAM

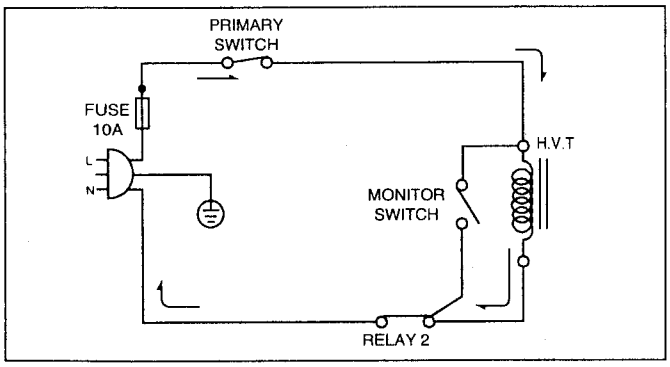


Circuit Description

- As the door is closed, the contact of MONITOR SWITCH opens. This switch creates the short circuit to blow 10 A fuse during operation under abnormal condition.(ie, should the contacts of primary fail to open the circuit)
- The latches are secured by latch board. The oven light turns on while the oven is in operation.

WHEN COOKING POWER LEVEL AND COOKING TIME ARE SET

- The contacts of the primary switch and the secondary switch close the circuit.
- 230V A.C. is applied to the high voltage transformer through power control switch as shown by the solid line.

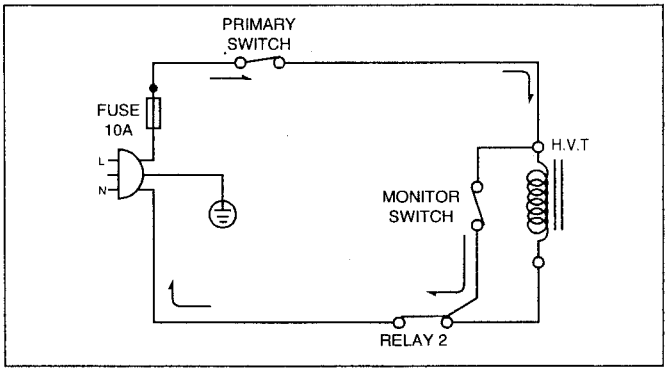


- Turntable and circulation motor rotate.
- The fan motor rotates and cools the magnetron by blowing the air (coming from the intake on the backplate) over the magnetron.
- The air is also directed into the oven to exhaust the vapor in the oven through the base plate and back plate.
- 3.5V A.C. is generated from the filament winding of the high voltage transformer. This 3.5V is applied to the magnetron to heat the magnetron filament through two noise preventing choke coils. A high voltage of approximately 2100V A.C. is generated in the secondary of the high voltage transformer which is increased by the action of the diode and charging of the high voltage capacitor. The negative D.C. voltage is then applied to the filament of the magnetron.

WHEN THE DOOR IS OPEN DURING COOKING

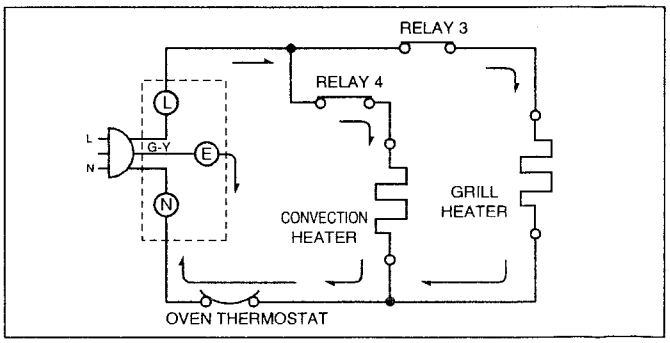
- Both primary switch and secondary switch open to cut off the primary winding voltage to the high voltage transformer to stop microwave oscillation.
- Turntable and fan motor stop.

- As the door is opened, if the contact of primary switch and relay 2 and/or secondary switch fail to open, the 10A fuse opens due to the large current surge caused by the monitor switch activation which in turn stops magnetron, oscillation.

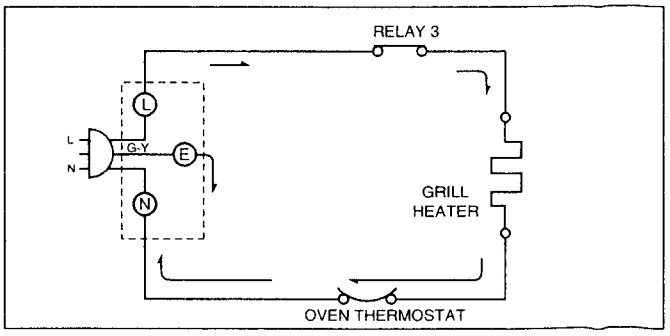


WHEN TOUCHING THE START KEY WITH THE CONVECTION/GRILL COOKING FUNCTION SELECTED.

- The contacts of the primary switch and the secondary switch close the circuit.
- 230V A.C. is applied to the grill heater through grill thermostat as shown by the solid line.
- Turntable rotate.



- The fan motor and circulation motor rotate.
- The air is also directed into the oven to exhaust the vapor in the oven through the base plate and back plate.



SERVICE INFORMATION

Tools and Measuring Instruments

NECESSARY TOOLS

Tools normally used for TV servicing are sufficient. Standard tools are listed below.

- Diagonal pliers
- Long nose pliers
- Cross head screwdriver
- Wrench (size 5 mm)
- Nutdriver (size 5 mm)
- Adjustable wrench
- Soldering iron
- Solder
- Vinyl insulation tape
- Polishing cloth

NECESSARY MEASURING INSTRUMENTS

- TESTER (VOLTS-DC, AC, Multmeter)
- Microwave survey meter
  —Holaday H1-1500, Hi-1501
  —Narda 8100, 8200
- Inch scale
- 600 cc non conductive material beaker (glass or plastic), inside diameter: approx. 8.5cm (3 1/2 in.)
- Cylindrical and made of borosilicate glass vessel max. thickness: 3mm
  outside diameter: approx. 190mm
  height: approx. 90mm
- Glass thermometer: 100°C or 212°F (1 deg scale)

Microwave Leakage Test

CAUTIONS

- Be sure to check a microwave emission prior to servicing the oven if the oven is operative prior to servicing.
- If the oven operates with door open, the service personnel should;
  —Tell the user not to operate the oven
- The service personnel should check all surface and vent openings for microwave emission testing.
- Check for microwave energy leakage after every servicing. The power density of the microwave radiation leakage emitted by the microwave oven should not exceed 4 mW/cm^2.
  And always start measuring of an unknown field to assure safety for operating personnel from radiation leakage.

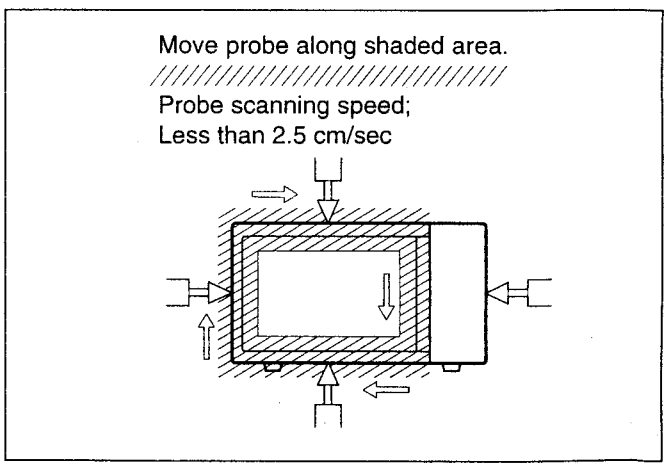
NOTE: The standard is 5 mW/cm^2 while in the customer's home. 4 mW/cm^2 stated here is manufacturer's own voluntary standard for units in customer's home.

EQUIPMENT

- Microwave Survey Meter
- 600cc glass beaker
- Glass thermometer 100°C

MEASURING MICROWAVE ENERGY LEAKAGE

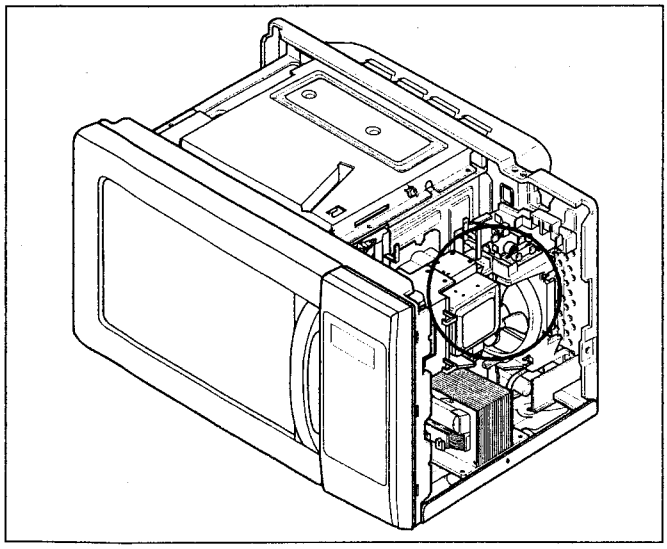
- Pour 275 ± 15cc of 20°C ± 5°C water in a beaker which is graduated to 600 cc, and place the beaker on the center of the turntable.
- Set the energy leakage monitor to 2,450 MHz and use it following the manufacturer's recommended test procedure to assure correct result.
- When measuring the leakage, always use the 2 inch (5cm) spacer supplied with the probe.
- Operate the oven at its maximum output.
- Measure the microwave radiation using and electromagnetic radiation monitor by holding the probe perpendicular to the surface being measured.



MEASUREMENT WITH THE OUTER CASE REMOVED

- When you replace the magnetron, measure microwave energy leakage before the out case is installed and after all necessary components are replaced or adjusted.
  Special care should be taken in measuring the following parts. (Shaded area of below Fig.)
  — Around the magnetron
  — The waveguide

WARNING : AVOID CONTACTING ANY HIGH VOLTAGE PARTS (Magnetron, H.V. Transformer, H.V. Capacitor, H.V. Cable Ass'y, H.V. Circuit Protector)



MEASUREMENT WITH A FULLY ASSEMBLED OVEN

- After all components, including the outer case, are fully assembled, measure for microwave energy leakage around the door viewing window, the exhaust opening and air inlet openings.
- Microwave energy leakage must not exceed the values prescribed below.

NOTES:
Leakage with the outer case removed - less than 5 mW/cm^2.
Leakage for a fully assembled oven ("Before the latch switch (primary) is interrupted") with the door in a slightly opened position - less than 4 mW/cm^2.

NOTES WHEN MEASURING

- Do not exceed meter full scale deflection.
- The test probe must be removed no faster than, 1 inch/sec (2.5 cm/sec) along the shaded area, otherwise a false reading may result.
- The test probe must be held with the grip portion of the handle.
  A false reading may result if the operator's hand is between the handle and the probe.
- When testing near a corner of the door, keep the probe perpendicular to the surface making sure the probe horizontally along the oven surface, this may possibly cause probe damage.

RECORD KEEPING AND NOTIFICATION AFTER MEASUREMENT

- After adjustment and repair of any microwave energy interruption or microwave energy blocking device, record the measured values for future reference. Also enter the information on the service invoice.
- Should the microwave energy leakage not be more than 4 mW/cm^2 after determining that all parts are in good condition, functioning properly and genuine replacement parts which are listed in this manual have been used.
- At least once a year, have the electromagnetic energy leakage monitor checked for calibration by its manufacture.

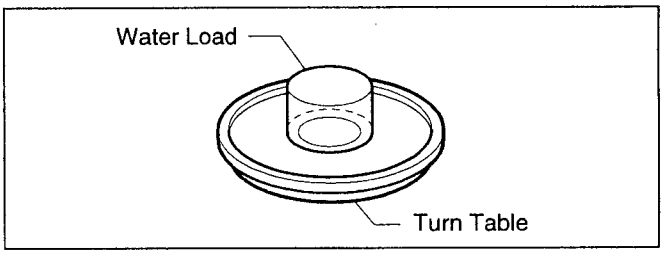
Measurement of Microwave Power Output

- Microwave power output measurement is made with the microwave oven supplied at its rated voltage and operated at its maximum microwave power setting with a load of (1000 ± 5)g potable water.
- The water is contained in a cylindrical borosilicate glass vessel having a maximum material thickness of 3 mm and an outside diameter of approximately 190 mm.
- The oven and the empty vessel are at ambient temperature prior to the start of the test.
- The initial temperature (±1) of the water is (10±2)°C. It is measured immediately before the water is added to the vessel. After addition of the water to the vessel, the load is immediately placed on the center of the shelf which is in the lowest position and the microwave power switched on.
- The time T for the temperature of the water to rise by a value ΔT of (10±2)°K is measured, where T is the time in seconds and ΔT is the temperature rise. The initial and final water temperatures are selected so that the maximum difference between the final water temperature and the ambient temperature is 5°K.
- The microwave power output P in watts is calculated from the following formula:

$$P = \frac{4187 \times (\Delta T)}{T}$$

is measured while the microwave generator is operating at full power. Magnetron filament heat-up time is not included.

- The water is stirred, to equalize temperature throughout the vessel, prior to measuring the final water temperature.
- Stirring devices and measuring instruments are selected in order to minimize addition or removal of heat.



Disassembly and Adjustment

A. OUT CASE REMOVAL

1) Disconnect power supply cord from the outlet.
2) Remove the screws from the rear and side section. The out case must be moved backward to the lifted off.

B. POWER SUPPLY CORD

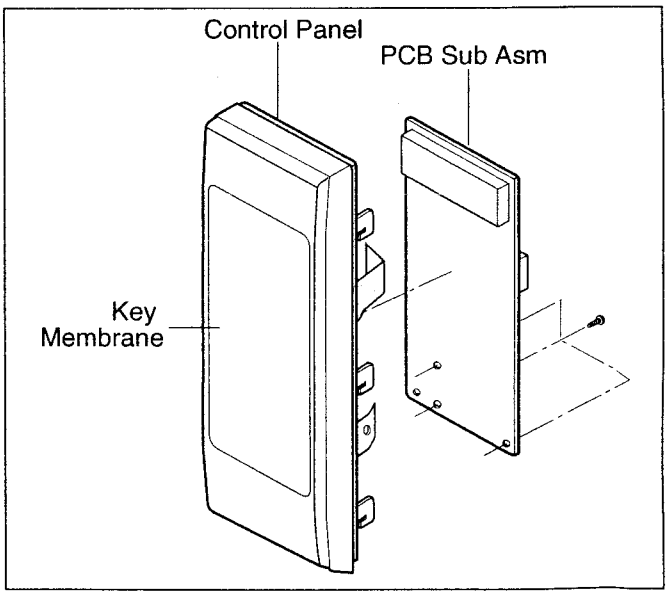
1) Remove the out case.
2) Disconnect two terminals from the noise filter assy and remove one screw of the earth terminal.

CAUTION: DISCHARGE HIGH VOLTAGE CAPACITOR BEFORE SERVICING (refer to page 5)

C. REMOVING CONTROL PANEL ASSEMBLY AND PCB ASSEMBLY

1) Disconnect the leadwire from the PCB SUB ASM.
2) Remove the screws for the earth and securing the control panel.
3) Lift control panel assembly from the oven by the tab unhooked.
4) Remove three screws securing the PCB SUB ASM from the control panel.
5) Remove the digitron window.

NOTE : Remove the leadwire and connector VERY CAREFULLY. Be sure to grasp the connector and not the wires.



D. DOOR GROSS ASSEMBLY REMOVAL

1) Open the door.
2) Remove the choke cover cap very carefully with a flat-blade screwdriver.

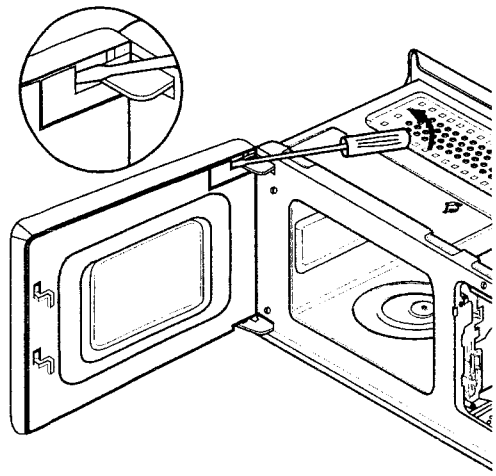
CAUTION : Be careful not to damage door seal plate with the screwdriver.

3) Lift up and push the door.

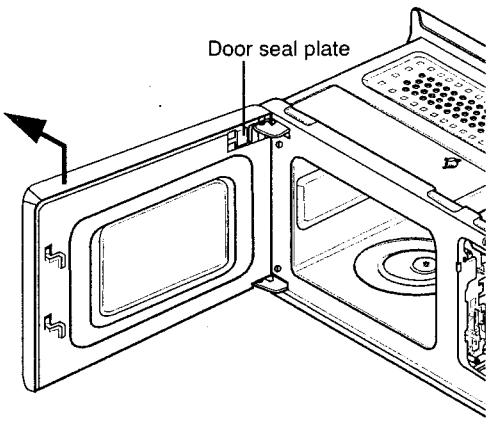
NOTES

1. After replacing the door, be sure to check that the primary switch, monitor switch, and secondary switch operate normally.
2. After replacing the door, check for microwave energy leakage with a survey meter. Microwave energy must be below the limit of 4 mW/cm^2. (with a 275 ml water load)
3. When mounting the door assembly to the oven assembly, be sure to adjust the door assembly parallel to the chassis. Also adjust so the door has no play between the inner door surface and oven frame assembly. If the door assembly is not mounted properly, microwaves may leak from the clearance between the door and the oven.

Remove the choke cover cap

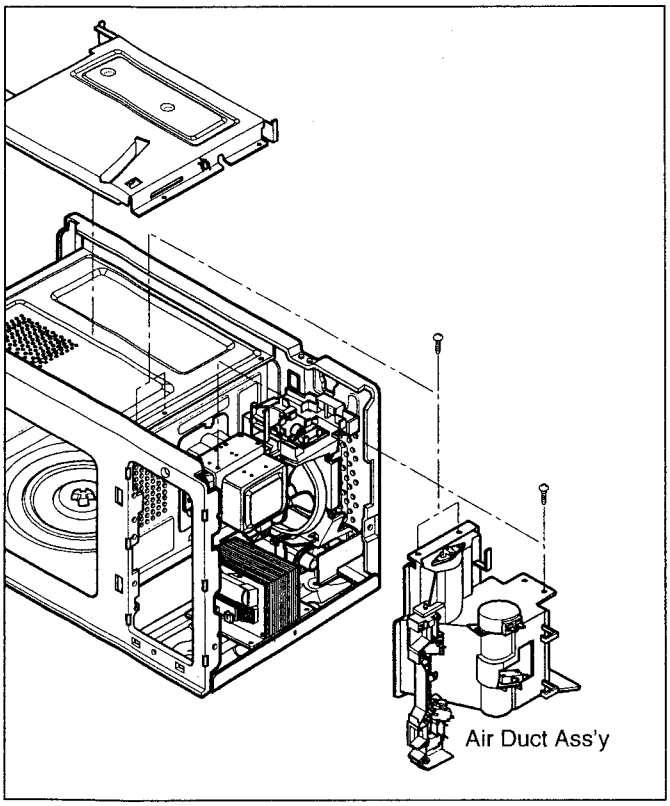


Remove door



E. AIR DUCT ASSEMBLY REMOVAL

1) Disconnect the leadwires from the lamp, micro switch, damper motor, and damper switch.
2) Remove the screws holding the oven cavity and latch board, air duct, and air tunnel assembly.
3) Remove the mounting screws holding the magnetron and air duct assembly.
4) Remove air tunnel.
5) Pull latch board assembly and air duct assembly.

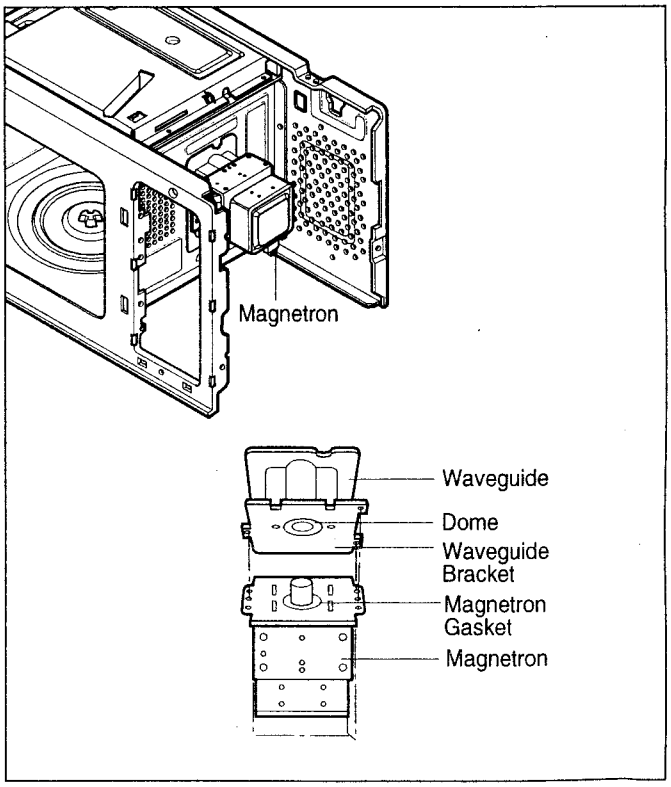


F. MAGNETRON REMOVAL

1) Remove the mounting screw holding the magnetron and air duct assembly.
2) Disconnect the leadwire from the magnetron.
3) Carefully remove the mounting screws holding the magnetron and the waveguide.
4) Remove the magnetron from the waveguide.

NOTE:

1. When removing the magnetron, make it sure dome does not hit any adjacent parts, or it may be damaged.
2. When replacing the magnetron, be sure to install the magnetron gasket in the correct position and be sure that the gasket is in good condition.
3. After replacing the magnetron, check for microwave leakage with a survey meter around the magnetron. Microwave energy must be below the limit of 5 mW/cm^2. (With a 275 ml. water load).
   Make sure that gasket is rigidly attached to the magnetron. To prevent microwave leakage, tighten the mounting screws properly, making sure there is no gap between the waveguide and the magnetron.



G. NOISE FILTER ASS'Y HIGH VOLTAGE DIODE, HIGH VOLTAGE CAPACITOR, AND COOLING FAN MOTOR REMOVAL

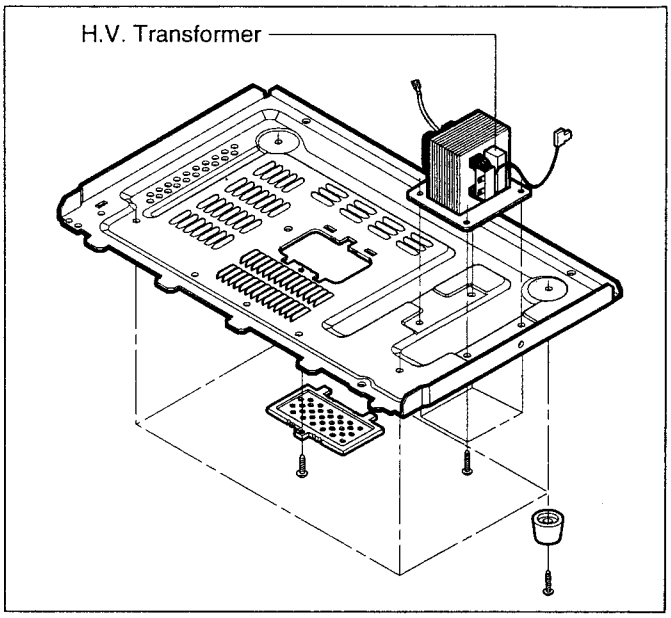
1) Disconnect lead wires from the noise filter ass'y and remove screw securing the noise filter earth wire to the back plate.
2) Push two hook of the guide suction and lift up the rear of noise filter ass'y.
3) Disconnect lead wires from H.V. capacitor and remove screw securing the H.V. diode earth wire to the back plate.
4) Disconnect each lead wires from the AC relay and the fan motor.
5) Remove two screws securing the guide suction ass'y to the back plate and lift up the guide suction ass'y.
6) Remove one screw from H.V. capacitor bracket.
7) Pull H.V. capacitor bracket from the guide suction.
8) Remove the fan from the fan motor.
9) Remove two screws securing the fan motor to the guide suction and lift it up.

H. OVEN LAMP REMOVAL

1) Disconnect the wire leads from oven lamp.
2) Remove one screw securing the Air Duct to the magnetron.
3) Push hook to Right and Left of Air Duct, with Drive.
4) Lift the oven Lamp up.

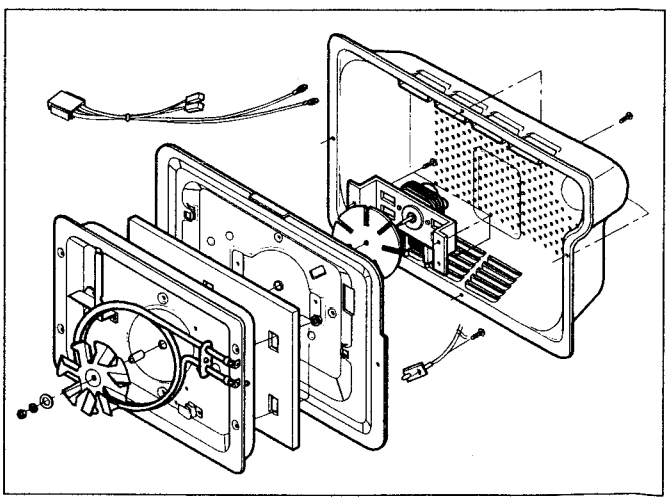
I. HIGH VOLTAGE TRANSFORMER REMOVAL

1) Disconnect the wire leads from the transformer to the magnetron, C. Protector ASS'Y assembly.
2) Remove four screws securing the H.V. transformer to the base plate.
3) Lift the H.V. transformer up.



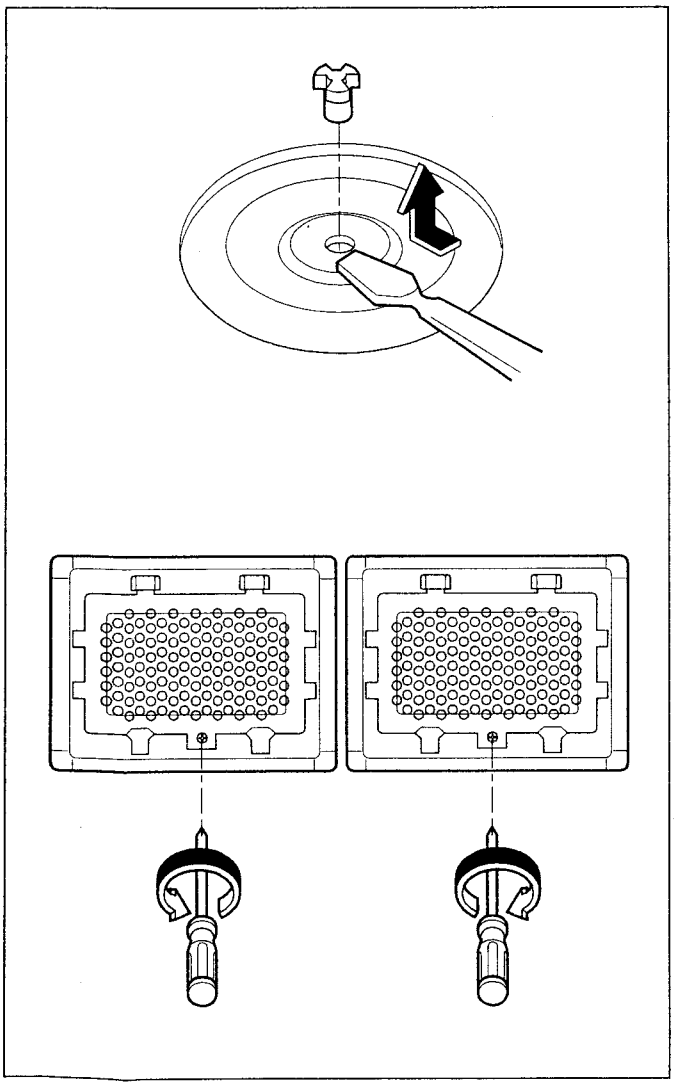
J. C-MOTOR, THERMISTOR AND SHEATH HEATER REMOVAL

1) Remove back cover after untieing four screws securing the cover assembly to the oven cavity.
2) Disconnect the leadwire from the circulation motor and the sheath heater terminal.
3) Remove four hex nuts holding chamber ass'y to the oven cavity.
4) Remove the screws of the thermistor, and lift up chamber ass'y.
5) Remove a hex nut securing the circulation fan to shaft of the C-motor.
6) Remove screws securing sheath heater to chamber wall.
7) Remove sheath heater from chamber ass'y.



K. TURNTABLE MOTOR REMOVAL

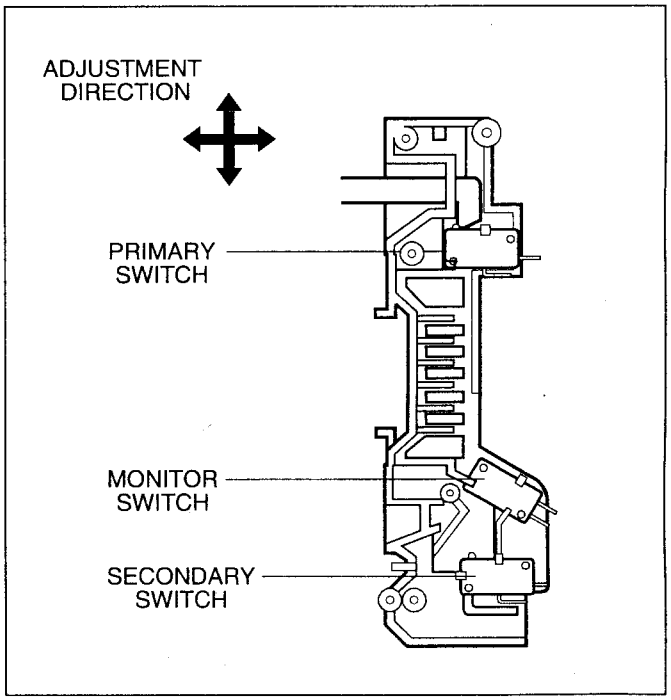
1) Remove the turntable.
2) Remove the turntable shaft VERY CAREFULLY with a slotted screw driver.
3) Lay the set down on its back.
4) Remove the turntable motor cover. The turntable motor base cover is easily removed by pinching the six parts with a wire cutting.
5) Disconnect the lead wires from the turntable motor terminals.
6) Remove two screws securing the turntable motor to the oven cavity assembly.
7) Lift the turntable motor and mount turntable motor.
8) After repairing the motor, fit the turntable motor cover's projecting part to the base plate's slit.



L. INTERLOCK SYSTEM

1) INTERLOCK MECHANISM
The door lock mechanism is a device which has been specially designed to completely eliminate microwave activity when the door is opened during cooking and thus to prevent the danger resulting from the microwave leakage.

2) MOUNTING OF THE PRIMARY, MONITOR AND SECONDARY SWITCH TO THE LATCH BOARD



3) INSTALLATION AND ADJUSTMENT OF THE LATCH BOARD TO THE OVEN ASSEMBLY

- Mount the latch board to the oven assembly.
- Adjust the latch board in the arrow direction so the oven door will not have any play in it when the door is closed.
- Tighten the mounting screw.
- Check for play in the door by pushing the door release button. Door movement should be less than 0.5mm. (1/64inch)
  Don't push the door release button while making adjustment. Make sure that the latch moves smoothly after adjustment are completed and that the screws are tight. Make sure the primary/monitor/secondary switch operate properly by following the continuity test procedure.

Interlock continuity Test

WARNING : FOR CONTINUED PROTECTION AGAINST EXCESSIVE RADIATION EMISSION,REPLACE ONLY WITH IDENTICAL REPLACEMENT RARTS.

TYPE NO. SZM-V 16-FA-63 OR VP-533A-OF FOR PRIMARY / SECONDARY SWITCH
TYPE NO. SZM-V 16-FA-62 OR VP-532A-OF FOR MONITOR SWITCH

A. PRIMARY INTERLOCK SWITCH TEST

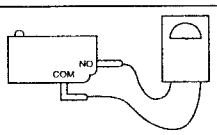
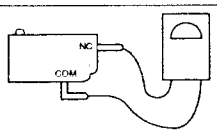
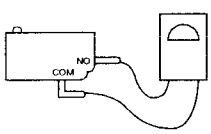
When the door button is slowly depressed with the door closed, an audible "click" should be heard at the same time or successively at intervals. When the button is slowly released, the latches should activate the switches with an audible "click".
If the latches do not activate the switches when the door is closed, the switches should be a adjusted in accordance with adjustment procedure. Disconnect the wire lead from the primary switch. Connect the multimeter leads to the common (COM) and normally open (NO) terminal of the switch. The meter should indicate an open circuit in the door open
condition.
When the door is closed, the meter should indicate a closed circuit.
When the primary switch operation is abnormal, make the necessary adjustment or replace the switch only with the same type of switch.

B. SECONDARY INTERLOCK SWITCH TEST

Disconnect the wire lead from the secondary switch. Connect the multimeter leads to the common (COM) and normally open (NO) terminals of the switch. The meter should indicate a open condition. When the door is closed, meter should indicate an closed circuit. When the secondary switch operation is abnormal, make the necessary adjustment or replace the switch only with the same type of switch.

C. MONITOR SWITCH TEST

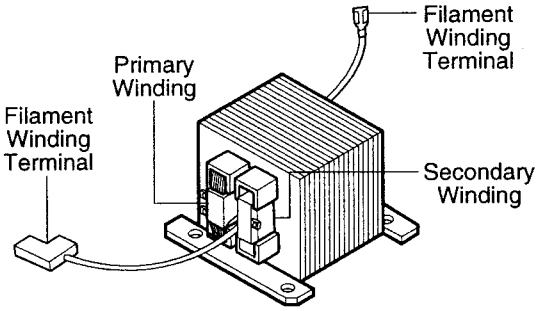
Disconnect the wire lead from the monitor switch. Connect the multimeter leads to the common (COM) and normally close (NC) terminals of the switch. The meter should indicate closed circuit in the door open condition. When the door is closed, meter should indicate an closed circuit.When the monitor switch operation is abnormal, replace the same type of switch.

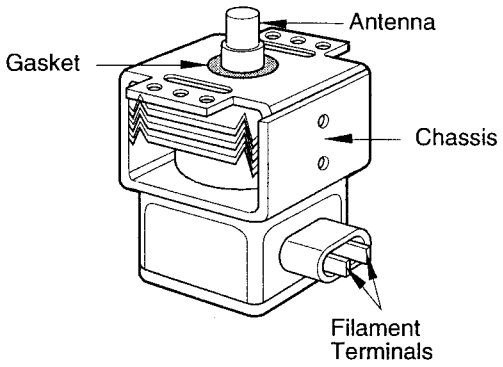
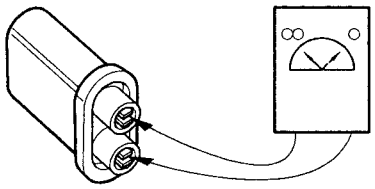
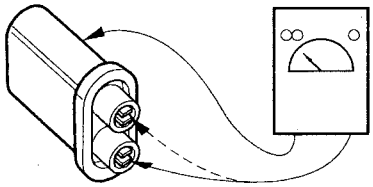
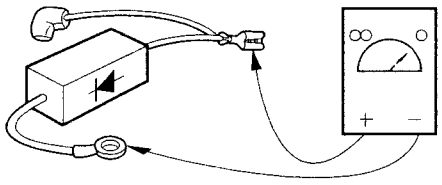
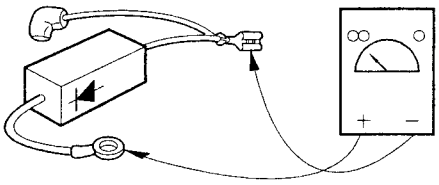
COMPONENTS	TEST PROCEDURE		RESULTS	
SWITCHES (Wire leads removed)	Check for continuity of the switch with a Multi-meter		Door open	Door close
	Primary Switch			
	Monitor Switch			
	Secondary Switch			
	NOTE: After checking for the continuity of switches, make sure that are correctly connected.			

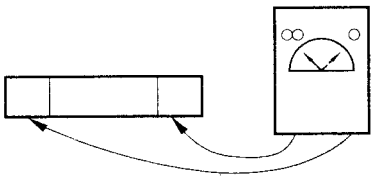
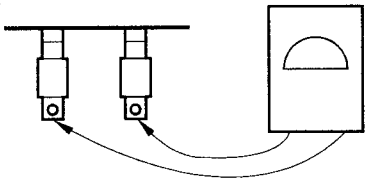
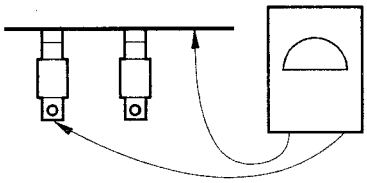
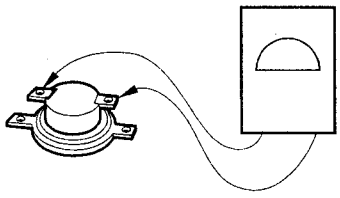
Component Test Procedure

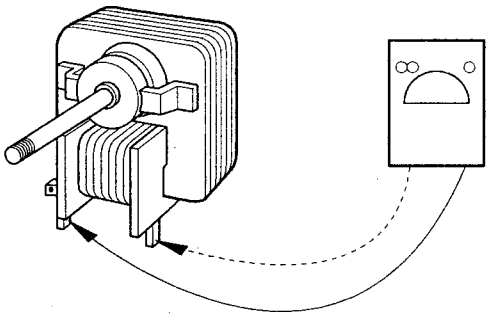
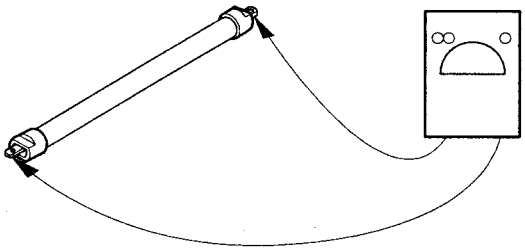
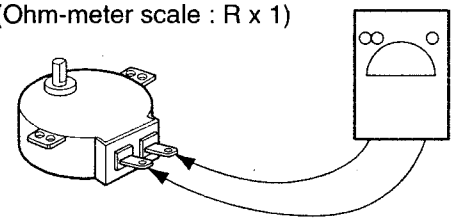
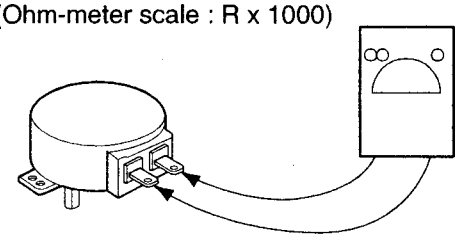
CAUTIONS

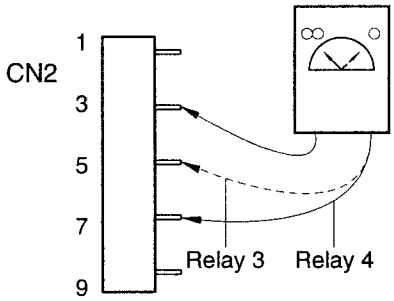
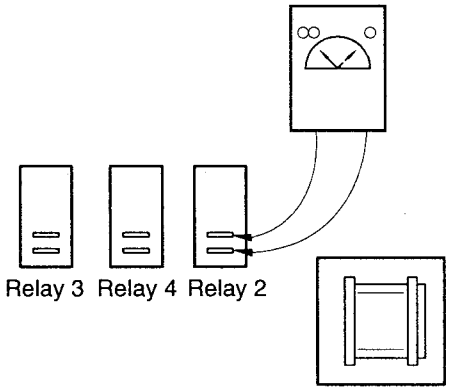
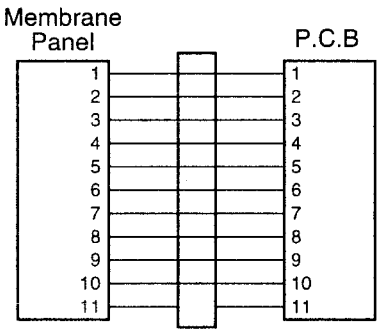
1. DISCONNECT THE POWER SUPPLY CORD FROM THE OUTLET WHENEVER REMOVING THE OUT CASE FROM THE UNIT. PROCEED WITH THE TEST ONLY AFTER DISCHARGING THE HIGH VOLTAGE CAPACITOR AND REMOVING THE WIRE LEADS FROM THE PRIMARY WINDING OF THE HIGH VOLTAGE TRANSFORMER. (SEE PAGE 5)
2. ALL OPERATIONAL CHECKS WITH MICROWAVE ENERGY MUST BE DONE WITH A LOAD (1 LITER OF WATER IN CONTAINER) IN THE OVEN.

COMPONENTS	TEST PROCEDURE	RESULTS
HIGH VOLTAGE TRANSFORMER (Wire leads removed)	 1. Measure the resistance. (Multi-meter scale: R X 1) • Primary winding • Secondary winding • Filament winding 2. Measure the resistance. (Multi-meter scale: R X 1000) • Primary winding to ground • Filament winding to ground	 Approx: 1.4 Ω Approx: 90 Ω Less than: 0.1 Ω Normal: ∞. Normal: ∞.
MAGNETRON (Wire leads removed)	1. Measure the resistance. (Multi-meter scale: R X 1) • Between filament terminals 2. Measure the resistance. (Multi-meter scale: R X 1000) • Filament to chassis.	 Normal: Less than 1 Ω Normal: ∞.

COMPONENTS	TEST PROCEDURE	RESULTS
	 **NOTE** : When testing the magnetron, be sure to install the magnetron gasket in the correct position and be sure that the gasket is in good condition.	
HIGH VOLTAGE CAPACITOR	Measure the resistance. (Multi-meter scale : R x 1000) • Terminal to termonal. 	Normal : Momentary indicates several ohms, and then gradually returns to infinite.
	Measure the resistance. (Multi-meter scale : R x 1000) • Terminal to case. 	Normal : ∞.
HIGH VOLTAGE DIODE **NOTE :** Some inexpensive meter may indicate infinite resistance in both direction.	Measure the continuity (Forward). (Multi-meter scale : R x 10000) 	Normal : Continuity. Abnormal : ∞.
	Measure the continuity (Reverse). (Multi-meter scale : R x 10000) 	Normal : ∞. Abnormal : Continuity.

<table>
<tr><th>COMPONENTS</th><th>TEST PROCEDURE</th><th colspan="2">RESULTS</th></tr>
<tr><td rowspan="2">FUSE
(Wire leads removed.)</td><td rowspan="2">Check for continuity of the switch with a Multi-meter.
  </td><td>Normal</td><td>Abnormal</td></tr>
<tr><td> </td><td> </td></tr>
<tr><td colspan="3">NOTE : If the fuse is blown, check the primary, the secondary, and the monitor switches, H.V.D. and H.V.C. before replacing the fuse.
If the fuse is blown by improper switch operation replace the defective switch and the fuse at the same time.
Replace just the fuse if the switches operate normally.</td></tr>
<tr><td rowspan="3">HEATER ELEMENT
(Wire leads removed)</td><td>Measure the resistance.
(Multi-meter scale : R x 1)
  </td><td colspan="2">Normal :
• Grill heater
Approx. 40.7 Ω
(at 20~30°C)</td></tr>
<tr><td>Measure the resistance with 500V-100M Ω insulation resistance meter.
  </td><td colspan="2">Normal : more than 0.5M Ω</td></tr>
<tr><td colspan="3">NOTE : Make sure heater is fully cooled when tested.</td></tr>
<tr><td rowspan="2">OVEN THERMOSTAT
MAGNETRON
THERMOSTAT</td><td rowspan="2">  </td><td>0°c~Approx 150°C</td><td>Approx 150°C</td></tr>
<tr><td> </td><td> </td></tr>
</table>

COMPONENTS	TEST PROCEDURE	RESULTS
CIRCULATION MOTOR (Wire leads removed) NOTE: *( ) = WIRE COLOR	Measure the resistance. (Multi-meter scale : R x 1) 	Normal : Approx. 160 Ω Abnormal : Infinite or several ohm.
GRILL HEATER (Wire leads removed)	Measure the resistance. (Multi-meter scale : R x 1) 	Normal : Approx. 200~300 Ω Abnormal : Infinite or several ohm.
TURNTABLE MOTOR (Wire leads removed)	Measure the resistance. (Ohm-meter scale : R x 1) 	Normal : Approx. 127 ohm Abnormal : Infinite or several ohm.
DAMPER MOTOR (Wire leads removed)	Measure the resistance. (Ohm-meter scale : R x 1000) 	Normal : Approx. 13.4 Kohm Abnormal : Infinite or several ohm.

COMPONENTS	TEST PROCEDURE	RESULTS	
RELAY 3, 4, OF P.C.B (Disconnect the 9 pin connector from P.C.B) See Schematic Dagram on page 9)		Cooking Start 	OFF
RELAY 2, 3, 4 OF P.C.B (Wire leads removed.) RY2 : Microwave RY3 : Grill RY4 : Convection		Cooking Start 	OFF
MEMBRANE KEY		Check continuity between switch terminals, by pressing an appropriate pad on key board. The contacts assignment of the respective pads on the key board is as shown left figures.	

NOTE : A MICROWAVE ENERGY LEAKAGE TEST MUST ALWAYS BE PERFORMED WHEN THE UNIT IS SERVICED FOR ANY REASON.
MAKE SURE THE WIRE LEADS ARE CORRECT POSITION.
WHEN REMOVING THE WIRE LEAD FROM THE PARTS, BE SURE TO GRASP THE CONNECTOR, NOT THE WIRES.

Trouble Shooting Guide

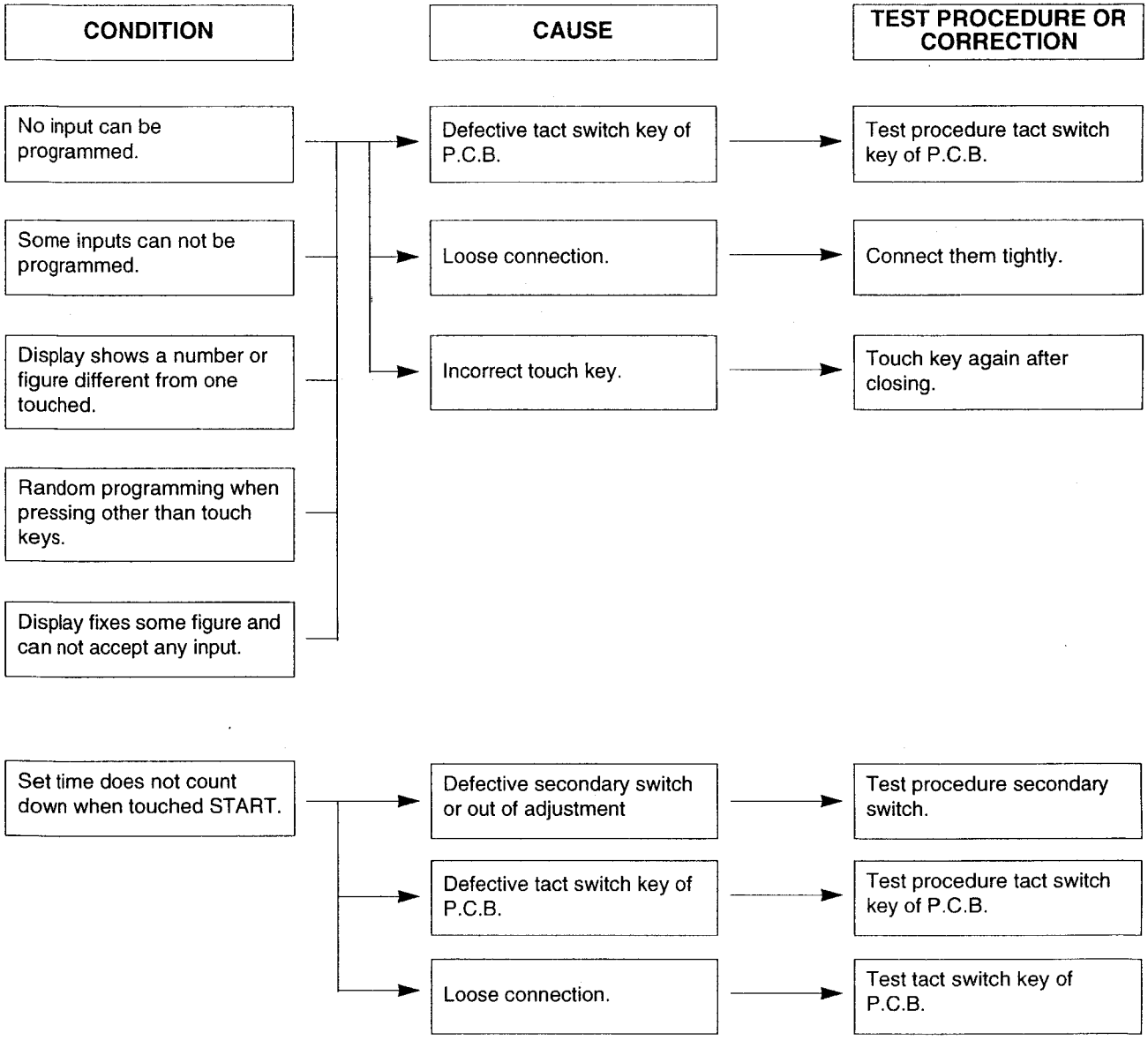
CAUTIONS

1. Check grounding before checking for other trouble.
2. Be careful of the high voltage circuit.
3. When checking the continuity of the switches or transformer, disconnect one lead wire from these parts and then check continuity without turning the power source on.
4. Do not touch any part of the circuitry on the control circuit board, since static electric discharge may damage this control circuit.
   Always touch yourself to ground while working on this circuit to discharge any static charge built up in your body.
5. First operate the microwave oven following the correct operating.
6. If the oven become inoperative because of a fuse, check the primary, the secondary and the monitor switches before replacing the fuse.

(TROUBLE 1) Oven does not operate all.

CONDITION	CAUSE	TEST PROCEDURE OR CORRECTION
	OFF CONDITION	
The fuse blows when power cord is plugged into wall receptacle.	Shorted lead wise assy or wire hardness.	Replace lead wire or check and repair wire hardness.
	Defective monitor switch or out of adjustment.	Test procedure switches.
": 0" does not appear in displasy window when power cord is first plugged into wall outlet.	Microwave oven plug is not inserted tightly.	Insert microwave oven plug securely.
	No power at outlet.	Check home fuse.
	Blown fuse.	Test procedure fuse.
	Open wire in power cord, wiring harness, or wiring between control panel assembly units.	Replace or repair wiring.
Display does not operate properly when CLOCK is touched.	Defective tact switch key of P.C.B.	Test procedure tact switch key.

(TROUBLE 2) Oven does not at all even thought MOTOR and P.C.B program.


CONDITION
CAUSE
TEST PROCEDURE OR CORRECTION
No input can be programmed.
Some inputs can not be programmed.
Display shows a number or figure different from one touched.
Random programming when pressing other than touch keys.
Display fixes some figure and can not accept any input.
Defective tact switch key of P.C.B.
Loose connection.
Incorrect touch key.
Test procedure tact switch key of P.C.B.
Connect them tightly.
Touch key again after closing.
Set time does not count down when touched START.
Defective secondary switch or out of adjustment
Defective tact switch key of P.C.B.
Loose connection.
Test procedure secondary switch.
Test procedure tact switch key of P.C.B.
Test tact switch key of P.C.B.

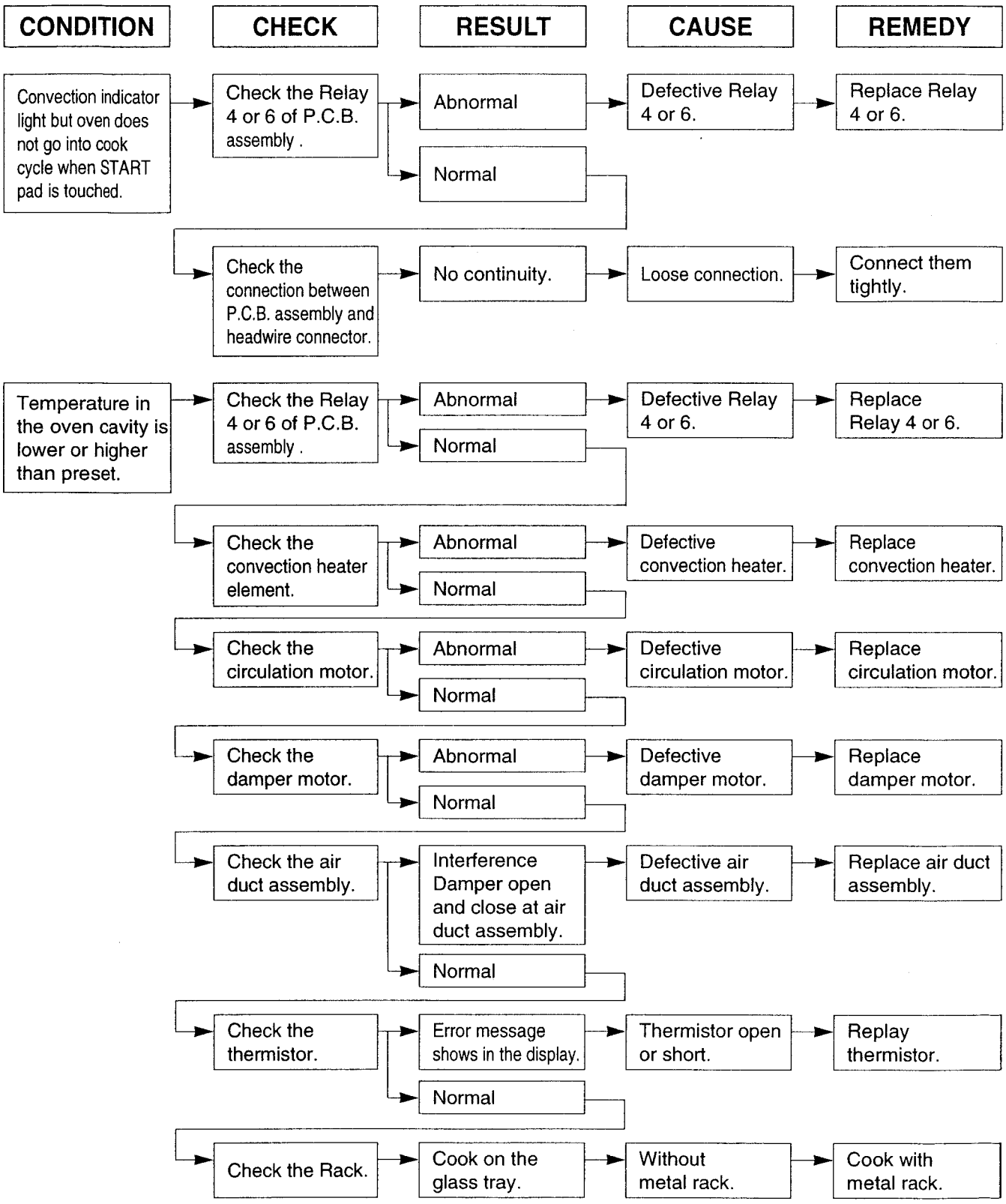
(TROUBLE 3) Oven does not operating microwave cooking

CONDITION	CAUSE	TEST PROCEDURE OR CORRECTION
Oven does not go into a cook cycle when START key is touched.	Primary and secondary interlock switches defective or out of adjustment.	Test procedure primary and secondary switches.
	Defective flat cable 1 of P.C.B.	Test procedure membrane key of P.C.B.
	Defective tact switch key of P.C.B.	Test procedure tact switch key of P.C.B.
	Open or loose wiring to above components.	Check and repair wiring.
Ouput power is too low.	Defective fan motor.	Test procedure fan motor.
	Low AC input voltage.	Use the microwave oven at adequate line voltage.
	Food temperature is too low.	This may not be a defect. It is possible that the food should be cooked for a longer period.
Output is too high when you set lower power level.	Defective relay 2 of P.C.B.	Test procedure relay 2 of P.C.B.
	High AC input voltage.	Use the microwave oven at adequate line voltage.
Uneven cooking.	Inconsistent intensity of microwave by their characteristics.	1. Wrap the thinner part with aluminum foil. 2. Use plastic wrap or with a lid. 3. Stir once or twice while cooking soup, cocoa or milk etc.
	Food does not turn during cook cycle.	Food or cookware extending oven edges of turntable prevents turning rearrange food.
	Turntable motor does not operate.	Refer to preceding turntable motor problem.

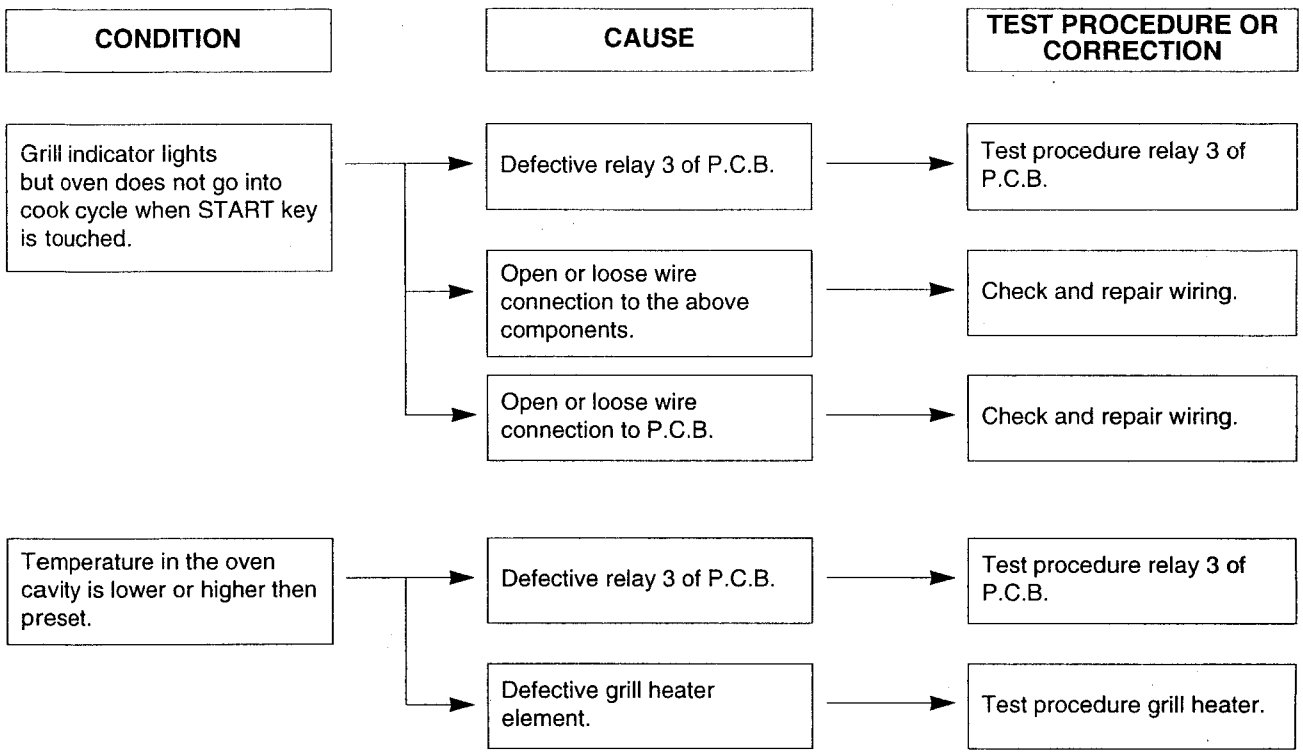
(TROUBLE 3) Oven does not operating microwave cooking

CONDITION	CAUSE	TEST PROCEDURE OR CORRECTION
No microwave oscillation.	Defective relay 2 of P.C.B.	Test procedure relay 2 of P.C.B.
	Defective high voltage transformer.	Test procedure high voltage transformer.
	Defective high voltage capacitor.	Test procedure high voltage capacitor.
	Defective high voltage diode.	Test procedure high voltage diode.
	Defective magnetron.	Test procedure magnetron.
	Low AC input voltage.	Use the microwave oven at adequate line voltage.
	Open or loose wiring to above components.	Check and repair wiring.
	Blown fuse	Check fuse
Spark occurring.	Using metallic ware and allowing it to touch the oven wall.	Do not use metallic ware for cooking except where noted in the cookbook.
	Ceramic ware trimmed in gold or silver powder is used.	Do not use any type of cook ware with metallic trimming.
	Grill rack is using in no load condition.	Do not use the oven at microwave and combination mode with the grill rack placed in the cavity when the oven is empty.

(TROUBLE 4) Oven does not operate convection cooking



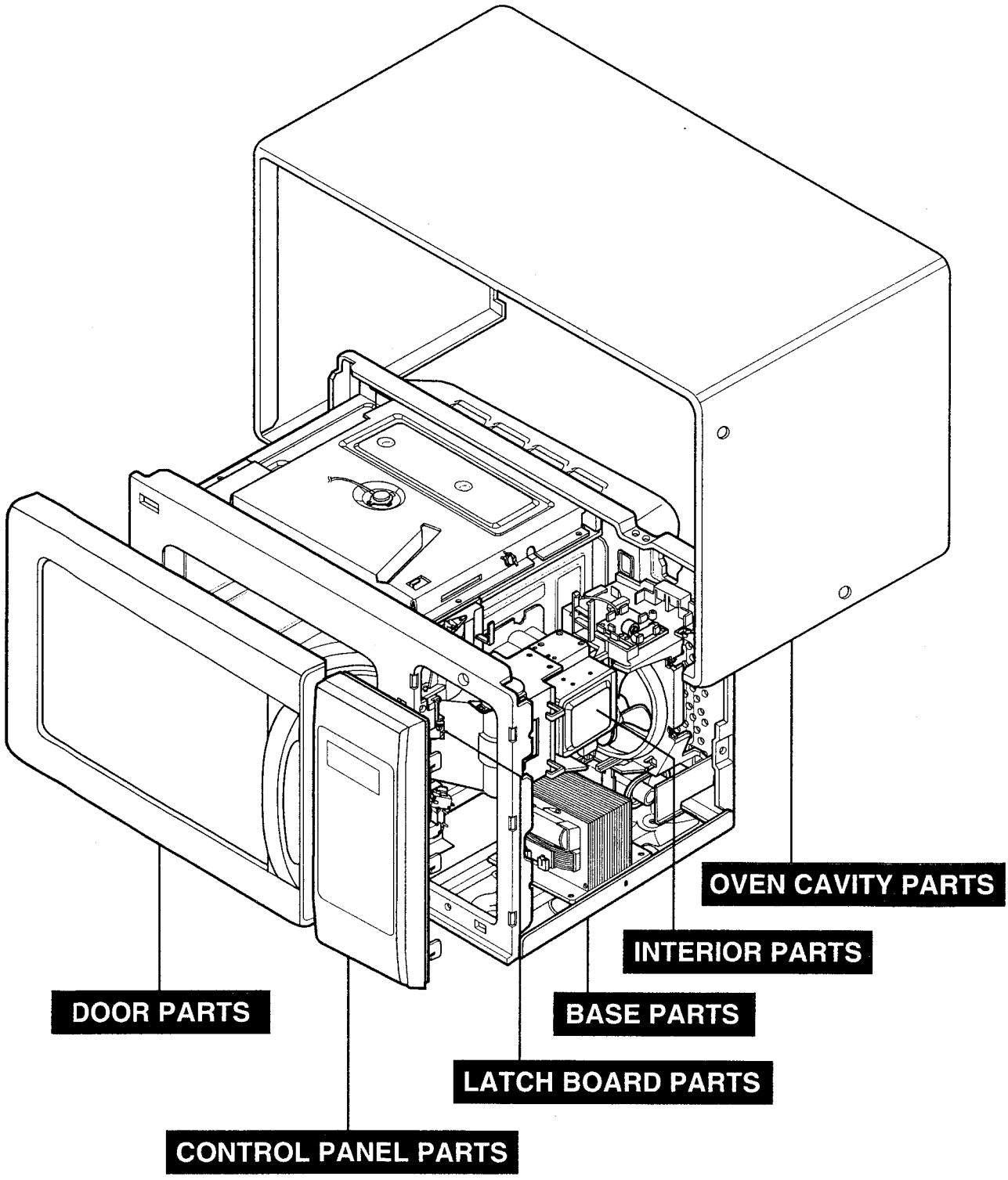
(TROUBLE 5) Oven does not operating Grill cooking


CONDITION
CAUSE
TEST PROCEDURE OR CORRECTION
Grill indicator lights but oven does not go into cook cycle when START key is touched.
Defective relay 3 of P.C.B.
Test procedure relay 3 of P.C.B.
Open or loose wire connection to the above components.
Check and repair wiring.
Open or loose wire connection to P.C.B.
Check and repair wiring.
Temperature in the oven cavity is lower or higher then preset.
Defective relay 3 of P.C.B.
Test procedure relay 3 of P.C.B.
Defective grill heater element.
Test procedure grill heater.

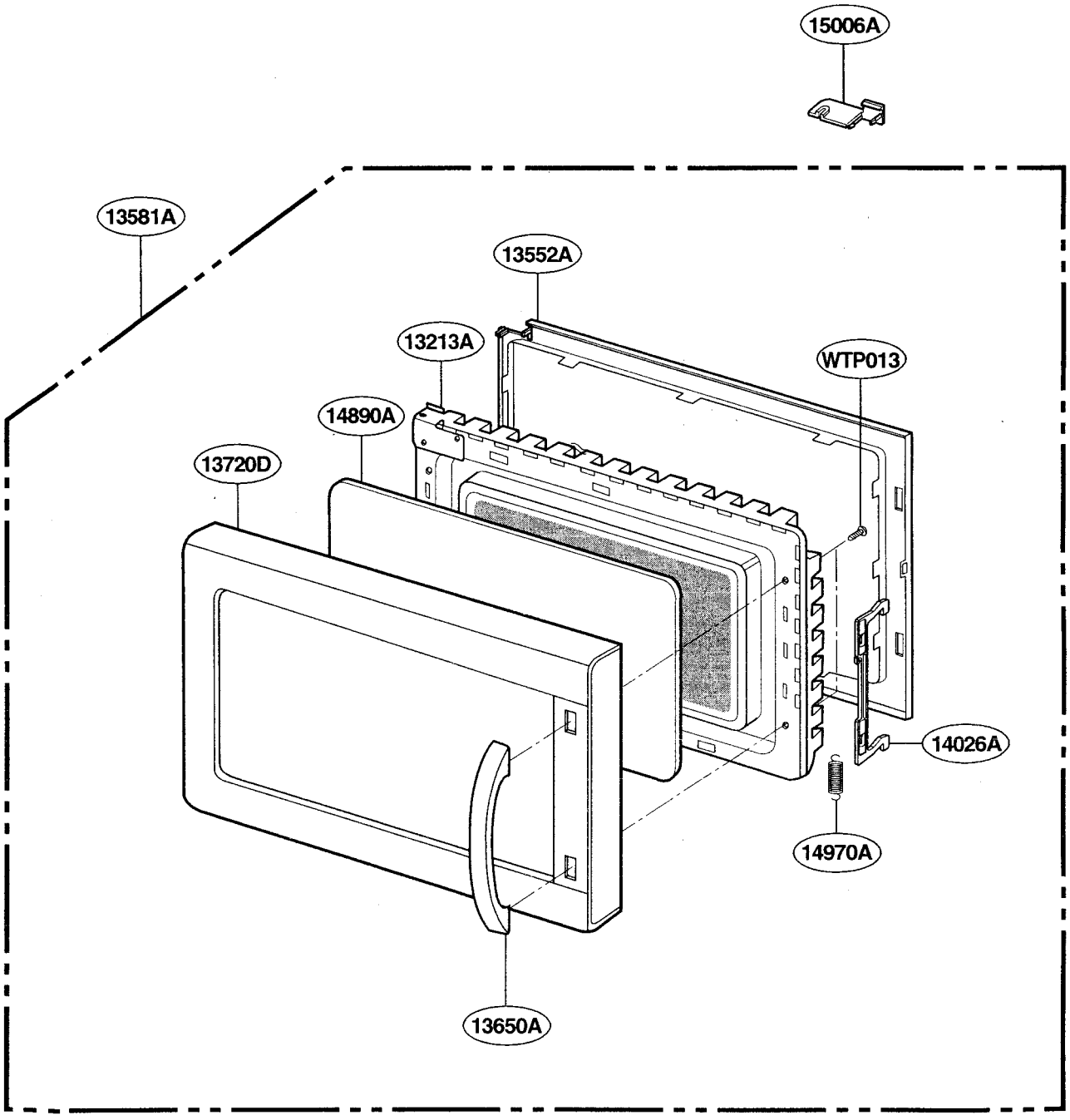
NOTE : • MAKE SURE THE WIRE LEADS CORRECT POSITION.
- WHEN REMOVING THE WIRE LEADS FROM THE PARTS, BE SURE TO GRASP THE CONNECTOR, AND NOT THE WIRES.
- WHEN REMOVING THE MAGNETRON, BE SURE TO INSTALL THE MAGNETRON GASKET IN THE CORRECT POSITION AND GOOD CONDITION.

EXPLODED VIEW

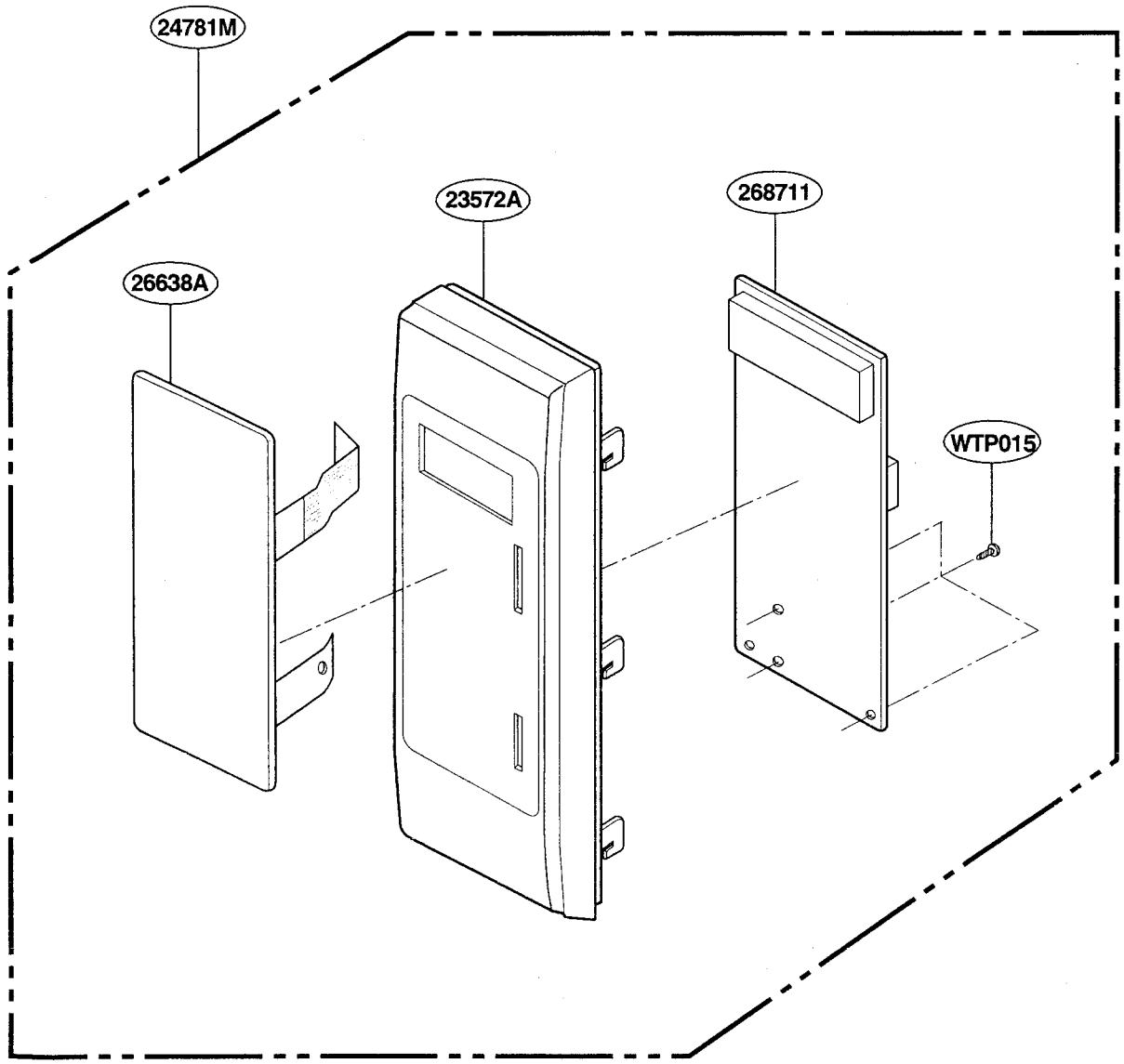
INTRODUCTION



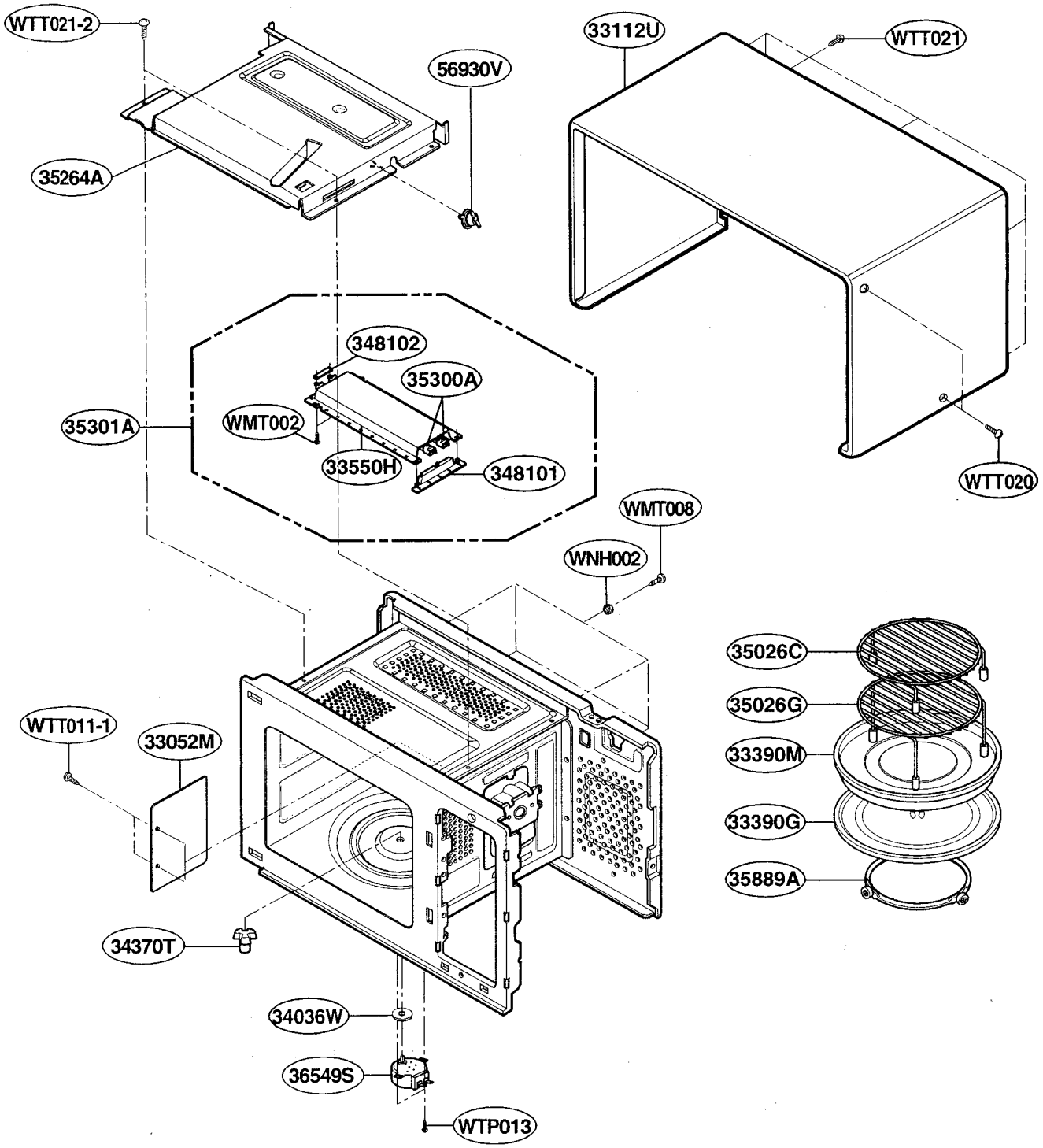
DOOR PARTS


15006A
13581A
13552A
13213A
WTP013
14890A
13720D
14026A
14970A
13650A

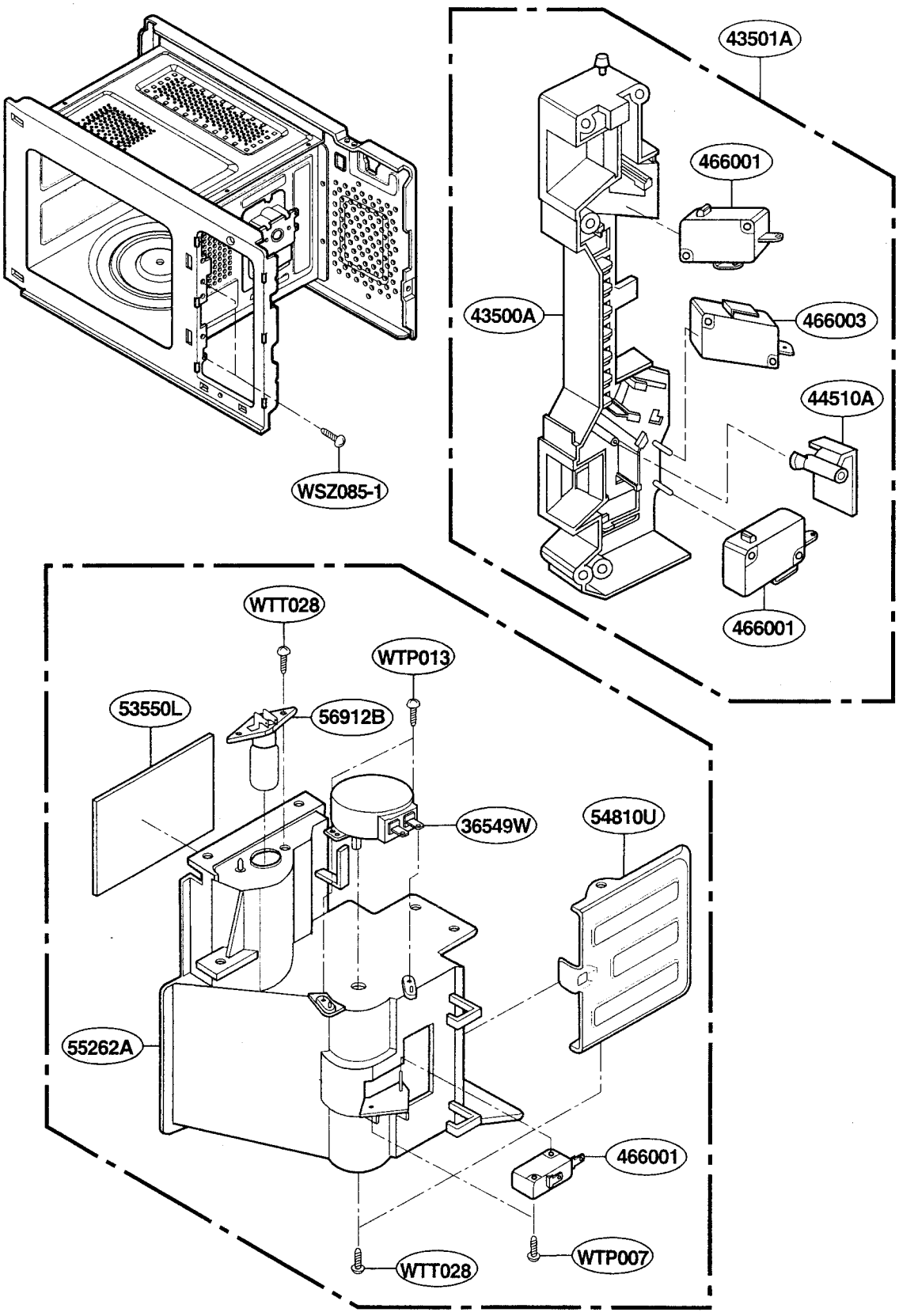
CONTROL PANEL PARTS



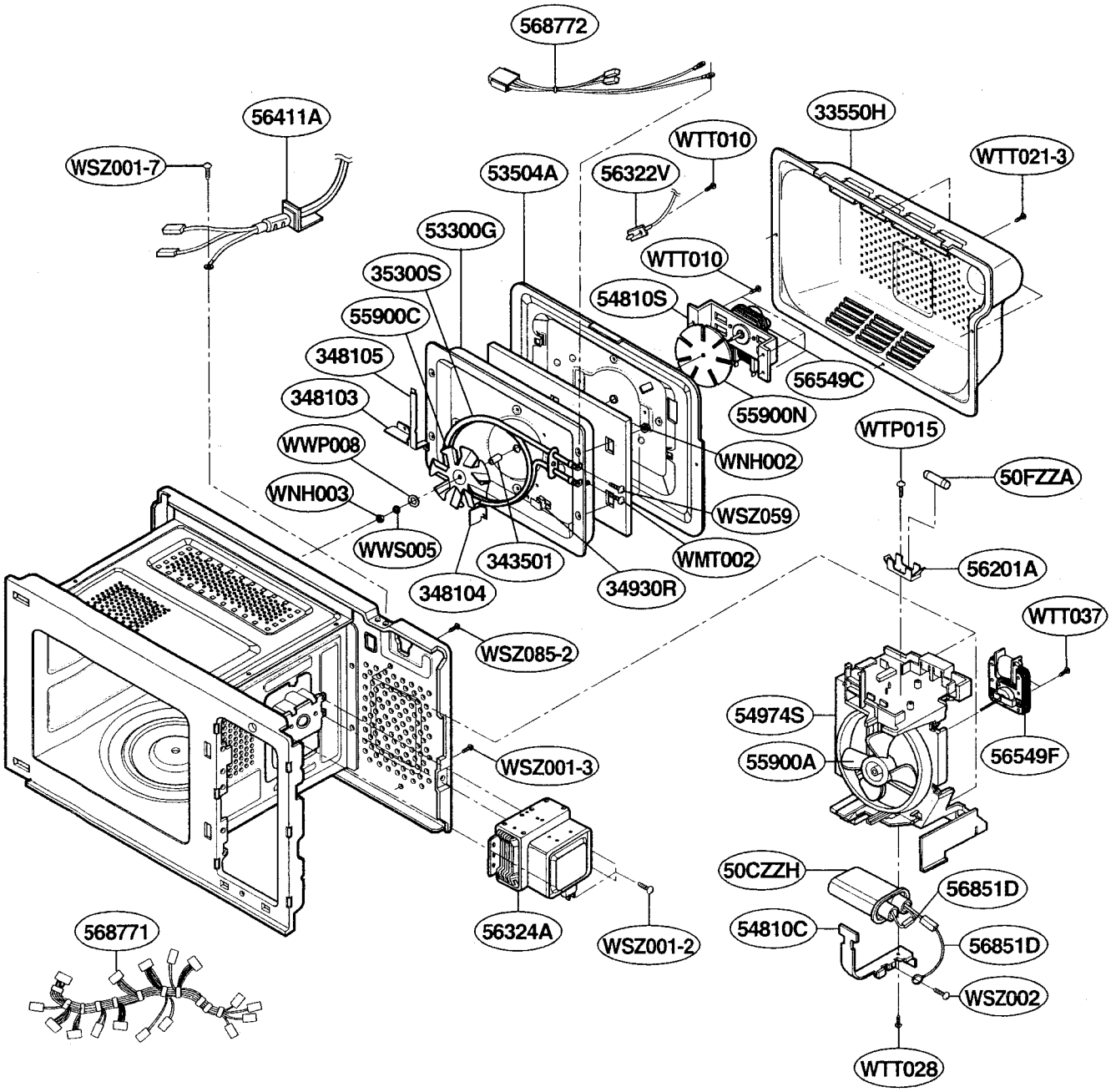
OVEN CAVITY PARTS



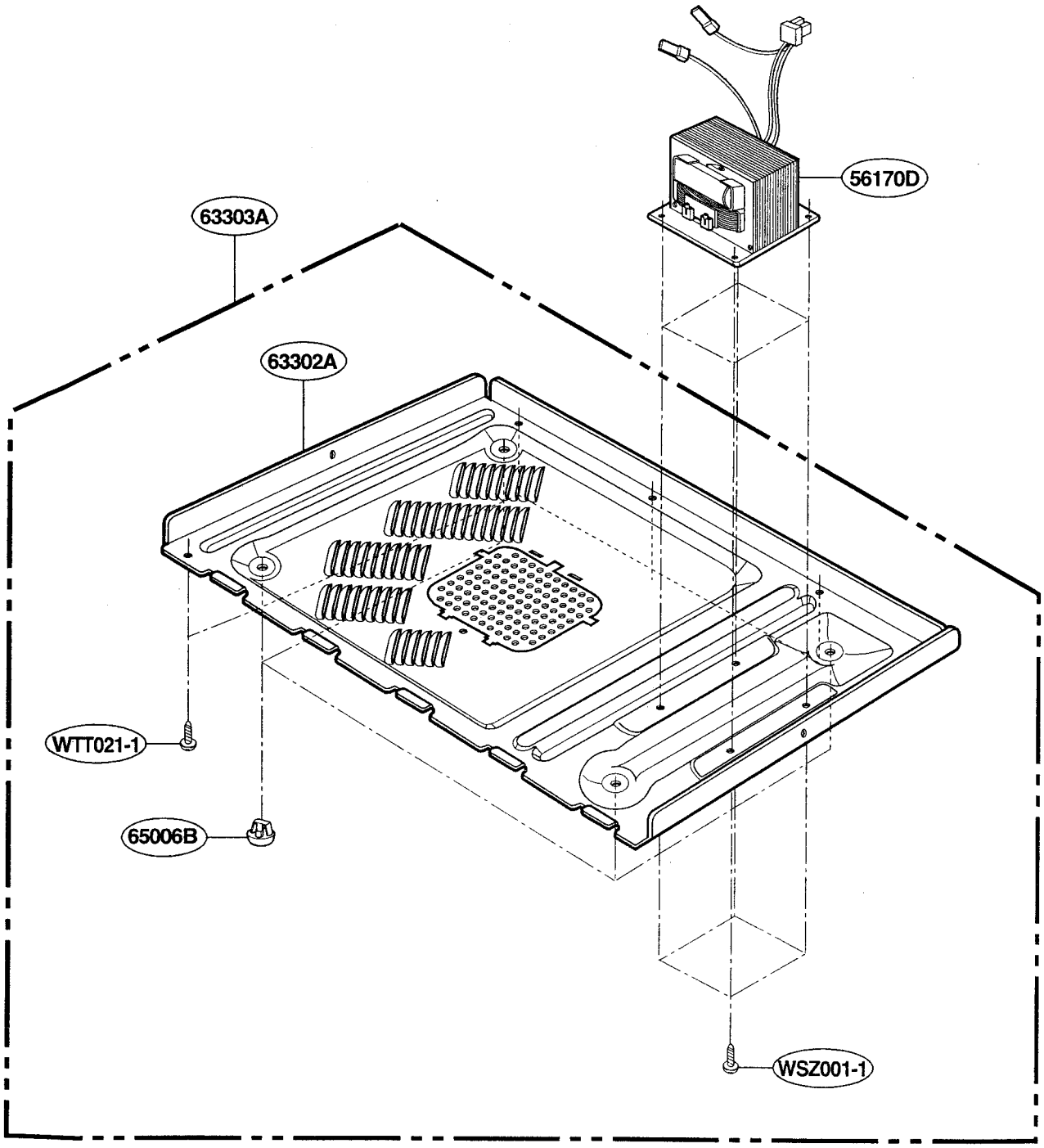
LATCH BOARD PARTS



INTERIOR PARTS



BASE PLATE PARTS



REPLACEMENT PARTS LIST

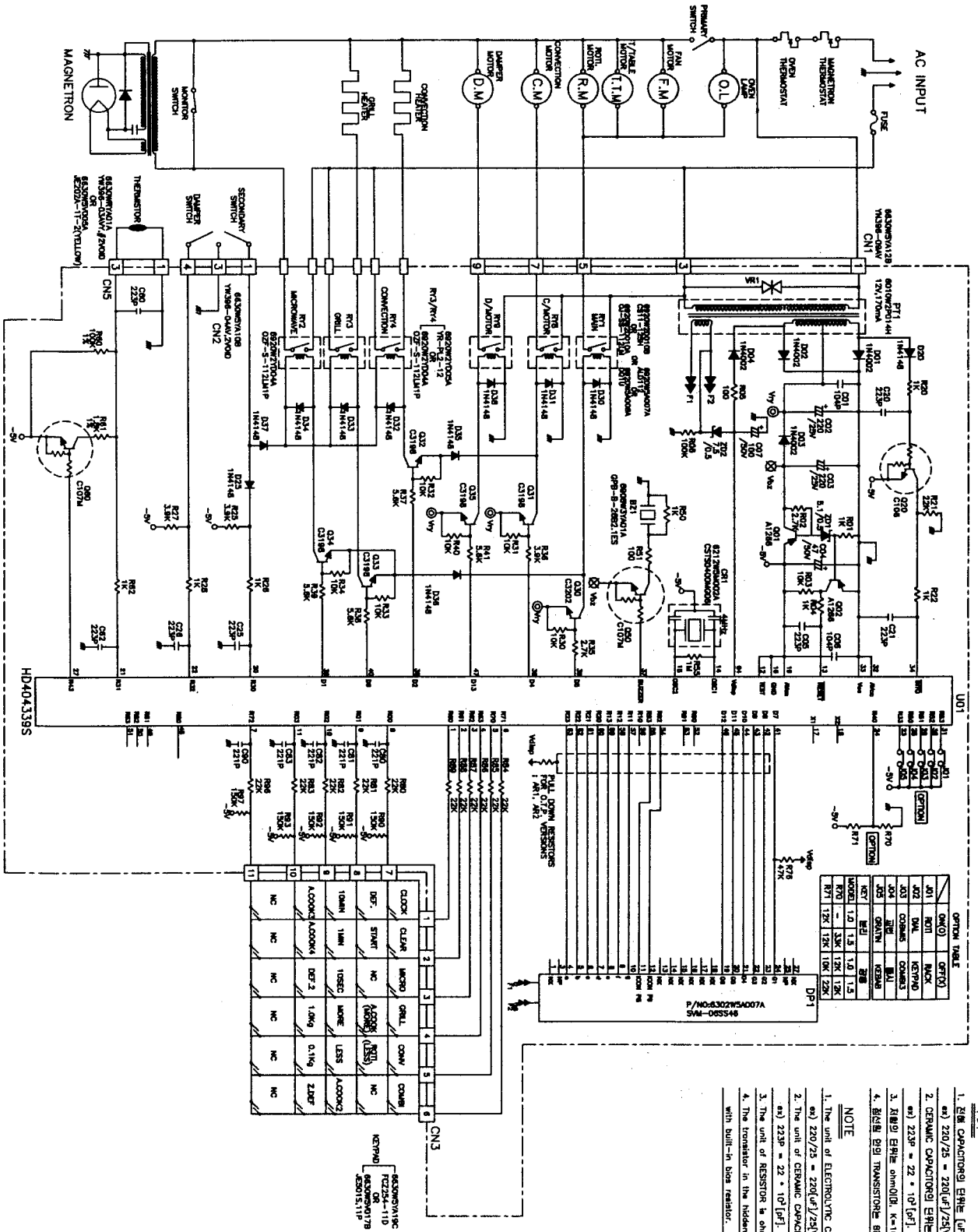
LOC. NO.	PART NO.	DESCRIPTION	SVC	ALTER
*01	3828W5A1918	MANUAL,[OWNERS]MWO	R	
*02	3828W5S1786	MANUAL,[SERVICE]	R	
*03	3878W5A0021	COOK BOOK	R	
13213A	3213W0A002C	DOOR FRAME ASSY	R	
13552A	3552W0A002A	CHOKE COVER	R	
13581A	3581W0A007A	DOOR ASSY	R	
13650A	3650W1A035B	HANDLE,[DOOR HANDLE]	R	
13720D	3720W0D149L	PANEL,[DOOR]	R	
14026A	4026W2A015A	LATCH	R	
14890A	4890W1A005F	GLASS	R	
14970A	4970WRA001E	SPRING	R	
15006A	5006W3A017A	CAP,[CHOKE COVER]	R	
23572A	3572W0A173B	CONTROL PANEL	R	
24781M	4781W1M230L	CONTROLLER ASSY,[MICOM]	R	
26638A	6638W2A333C	KEY MEMBRANE	R	
268711	6871W2S175E	PWB(PCB) ASSY,[MAIN]	R	
33052M	3052W3M022A	CANOPY,[MICA]	R	
33112U	3112W0U040A	OUT CASE,[U-BENDING]	R	
33390G	1B71961E	TRAY,[GLASS]	R	1B71961A
33390M	3390W2P002F	TRAY,[METAL]	R	
33550H	3550W2A076A	COVER,[HEATER COVER]	R	
34036W	4036W3W001A	SEAL,WATER	R	
343501	4B73725A	RING	R	
34370T	4370W3A001A	SHAFT,[TURN TABLE SHAFT]	R	
348101	4810W3G082A	BRACKET,[HEATER]	R	
348102	4810W4G066A	BRACKET,[HEATER]	R	
348103	4810W3H004A	BRACKET,[HEATER]	R	
348104	4810W3H003A	BRACKET,[HEATER]	R	
348105	4810W3H002A	BRACKET,[HEATER]	R	
34930R	4930W3A014A	HOLDER	R	
35026C	5026W1A035D	SHELF	R	
35026G	5026W1A035F	SHELF	R	
35264A	5264W1A015A	AIR TUNNEL	R	
35300A	5300W2A006D	HEATER,MIRACLON	R	
35300S	5300W1S006B	HEATER,[SHEATH]	R	
35301A	5301W2A034A	HEATER ASSY	R	
35889A	5889W2A017A	ROTATING RING ASSY	R	
36549S	2B72754F	MOTOR(CIRC),SYNCHRONOUS	R	
36549W	6549W1S002A	MOTOR(CIRC),SYNCHRONOUS	R	6549W1S003A
43500A	3500W1A013A	BOARD,[LATCH BOARD]	R	
43501A	3501W1A019A	BOARD ASSY,[LATCH]	R	
44510A	4510W4A005A	LEVER	R	
466001	6600W1K001D	SWITCH,MICRO	R	3B73362E
466003	6600W1K001C	SWITCH,MICRO	R	3B73361D
50CZZH	0CZZW1H002K	CAPACITOR,DRAWING[HIGH VOLTAGE]	R	6120W3H003K
50FZZA	3B70856K	FUSE,DRAWING	R	
53300G	3300W1G088A	PLATE,[INNER PLATE]	R	

R: SERVICE PARTS

LOC. NO.	PART NO.	DESCRIPTION	SVC	ALTER
53504A	3300W1G087A	CHAMBER	R	
53550L	3550W3L001A	COVER,[LAMP COVER]	R	
54810C	4810W4C003A	BRACKET,[CAPACITOR]	R	
54810S	3B72717A	BRACKET,[CONVETION MOTOR]	R	
54810U	4810W2U002A	BRACKET,[DAMPER]	R	
54974S	4974W1S046A	GUIDE,[SUCTION GUIDE]	R	
55262A	5263W1A020C	DUCT ASSY,[AIR DUCT]	R	
55900A	2B72279B	FAN	R	
55900C	3B72561A	FAN	R	
55900N	3B72559A	FAN	R	
56170D	6170W1D029A	TRANSFORMER,HIGH VOLTAGE	R	
56201A	6201W2A021B	FILTER ASSY,NOISE	R	
56322V	6322W2A001A	THERMISTOR,VARI	R	
56324A	6324W1A001B	MAGNETRON	R	
56411A	6411W2C001E	POWER CORD ASSY	R	
56549C	2B72063A	MOTOR(CIRC),CIRCULATION	R	
56549F	6549W1F001T	MOTOR(CIRC),FAN	R	
56851D	6851W1A001A	CABLE ASSY,CIRCUIT PROTECTOR	R	
568771	6877W1A271A	LEAD WIRE ASSY	R	
568772	6877W2A002B	LEAD WIRE ASSY	R	
56912B	6912W3B002D	LAMP[OVEN/BASELESS]	R	6912W3B002J
56930V	6930W1A002B	THERMOSTAT,BIMETAL	R	6930WRT003B
63302A	3302W0A022A	BASE PLATE	R	
63303A	3303W1A045A	BASE PLATE ASSY	R	
65006B	5006W3A016B	CAP,[BASE PLATE]	R	
WMT002	1MTC0402432	SCREW MACHINE,TRUSS HEAD	R	
WMT008	1MTC0402832	SCREW MACHINE,TRUSS HEAD	R	
WNH002	1NHA0400018	NUT,HEXAGON[1]	R	
WNH003	1NHA0400032	NUT,HEXAGON[1]	R	
WSZ001	1SBF0402418	SCREW TAP TITE(S),BINDING HEAD	R	
WSZ002	1SBF0402418	SCREW TAP TITE(S),BINDING HEAD	R	
WSZ059	4000W4A001A	SCREW,	R	
WSZ085	4B70188C	SCREW,	R	
WTP007	1TPL0303118	SCREW TAPPING,PAN HEAD	R	
WTP013	1TPL0402418	SCREW TAPPING,PAN HEAD	R	
WTP015	1TPL0402618	SCREW TAPPING,PAN HEAD	R	
WTT010	1TTL0402422	SCREW TAPPING,TRUSS HEAD	R	
WTT011	1TTG0402632	SCREW TAPPING,TRUSS HEAD	R	
WTT020	1TTL0402416	SCREW TAPPING,TRUSS HEAD	R	
WTT021	1TTL0402418	SCREW TAPPING,TRUSS HEAD	R	
WTT028	1TTL0402818	SCREW TAPPING,TRUSS HEAD	R	
WTT037	1TTL0403818	SCREW TAPPING,TRUSS HEAD	R	
WWP008	1WPL0500032	WASHER,PLAIN	R	
WWS005	1WSD0400032	WASHER,SPRING LOCK	R	

R: SERVICE PARTS

SCHEMATIC DIAGRAM OF P.C.B



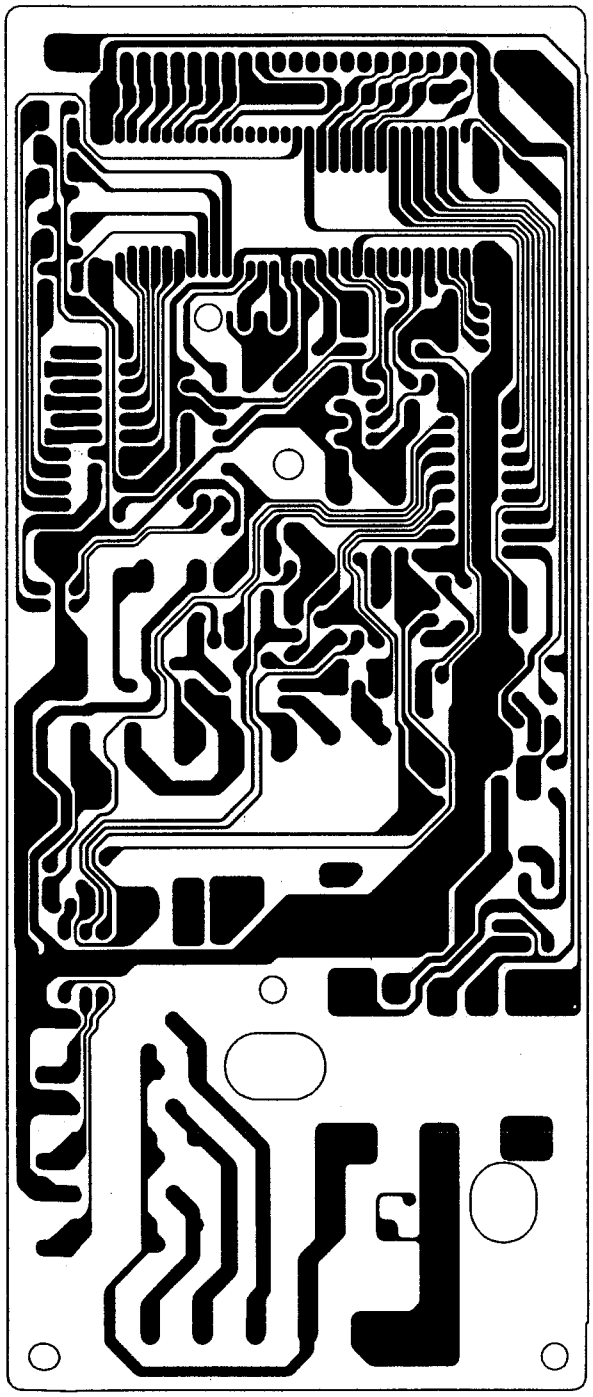
주기

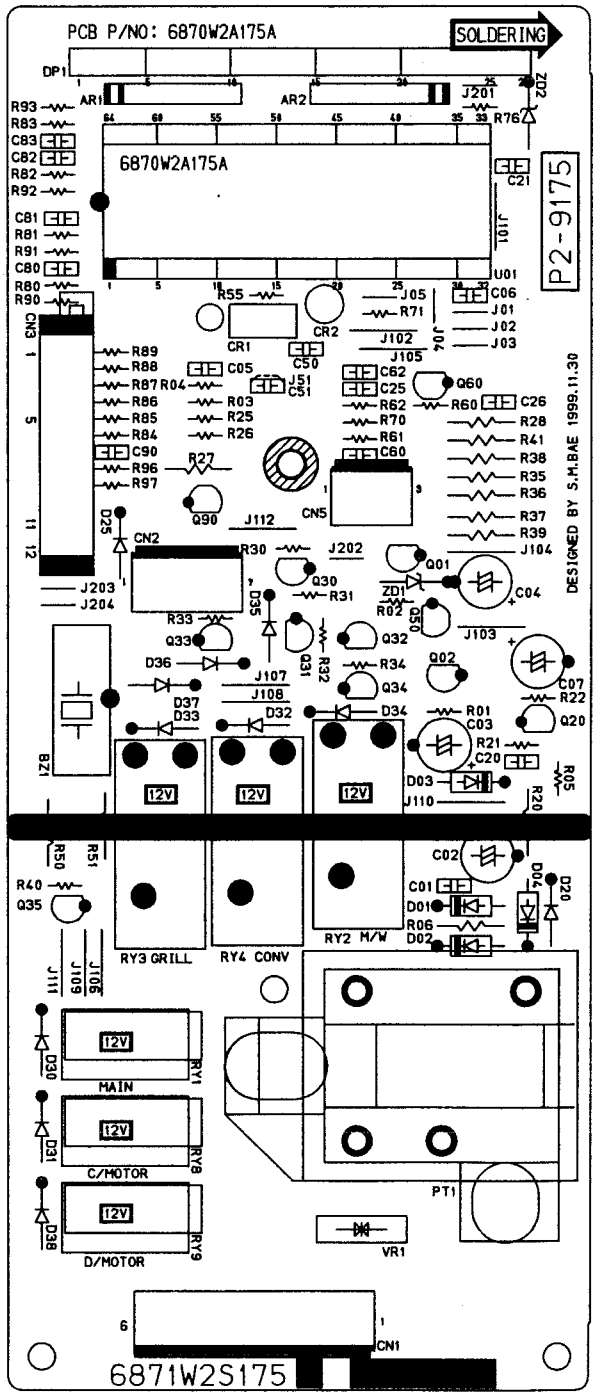
1. 전해 CAPACITOR의 단위는 [uF/V]이다.
   ex) 220/25 = 220[uF/25V].
2. CERAMIC CAPACITOR의 단위는 [pF]이다.
   ex) 223P = 22 * 10³ [pF].
3. 저항의 단위는 ohm이며, K=1000, M=K*K 이다.
4. 별도의 언급 없는 TRANSISTOR는 Bias 저항 내장형이다.

NOTE

1. The unit of ELECTROLYTIC CAPACITOR is [uF/V].
   ex) 220/25 = 220[uF/25V].
2. The unit of CERAMIC CAPACITOR is [pF].
   ex) 223P = 22 * 10³ [pF].
3. The unit of RESISTOR is ohm, and K=1000, M=K*K.
4. The transistor in the hidden circle line is transistor with built-in bias resistor.

PRINTED CIRCUIT BOARD





P.C.B PARTS LIST

LOC. NO.	PART NO.	DESCRIPTION	SPECIFICATION	SVC	ALTER
BZ1	6908W3YA01A	BUZZER,PIEZO CERAMIC	GPB-B-26B2.1ES(EXTERNAL)	R	6908W3YA01C
C01	0CK1040K518	CAPACITOR,CERAMIC (HIGH DIELEC	0.1000UF 50V K B TA26	R	
C02	0CE2272H638	CAPACITOR,AL.ELECTROLYTIC	220UF SME 25V M FM5 TP5	R	
C03	0CE2272H638	CAPACITOR,AL.ELECTROLYTIC	220UF SME 25V M FM5 TP5	R	
C04	0CE4761K638	CAPACITOR,AL.ELECTROLYTIC	47UF SM,SA 50V M FM5 TP 5	R	
C05	0CK2230H518	CAPACITOR,CERAMIC (HIGH DIELEC	0.0220UF 25V K B TA26	R	
C06	0CK1040K518	CAPACITOR,CERAMIC (HIGH DIELEC	0.1000UF 50V K B TA26	R	
C07	0CE1071K638	CAPACITOR,AL.ELECTROLYTIC	100UF SM 50V M FM5 TP5	R	
C20	0CK2230H518	CAPACITOR,CERAMIC (HIGH DIELEC	0.0220UF 25V K B TA26	R	
C21	0CK2230H518	CAPACITOR,CERAMIC (HIGH DIELEC	0.0220UF 25V K B TA26	R	
C25	0CK2230H518	CAPACITOR,CERAMIC (HIGH DIELEC	0.0220UF 25V K B TA26	R	
C26	0CK2230H518	CAPACITOR,CERAMIC (HIGH DIELEC	0.0220UF 25V K B TA26	R	
C60	0CK2230H518	CAPACITOR,CERAMIC (HIGH DIELEC	0.0220UF 25V K B TA26	R	
C62	0CK2230H518	CAPACITOR,CERAMIC (HIGH DIELEC	0.0220UF 25V K B TA26	R	
CN1	6630W5V012B	CONNECTOR (CIRC),WAFER	YW396-9AV(2,4,6,8VOID)	R	
CN2	6630W5YA10B	CONNECTOR (CIRC),WAFER	YW396-04AV,4PIN,2VOID	R	
CN3	6630W5YA19C	CONNECTOR (CIRC),WAFER	FCZ254-11D	R	6630W5V017B
CN5	6630WRYA01A	CONNECTOR (CIRC),WAFER	YW396-03AVY,#2 VOID(YELLOW)	R	6630W5V005A
CR1	6212W5M002A	RESONATOR	CSTS0400MG06-T2 MURATA 4.0MHZH	R	
CU1	4850W4C001B	CUSHION	5MM	R	
D01	0DD400209AA	DIODE,RECTIFIER	1N4002 TP PYUNG CHANG	R	
D02	0DD400209AA	DIODE,RECTIFIER	1N4002 TP PYUNG CHANG	R	
D03	0DD400209AA	DIODE,RECTIFIER	1N4002 TP PYUNG CHANG	R	
D04	0DD400209AA	DIODE,RECTIFIER	1N4002 TP PYUNG CHANG	R	
D20	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D25	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D30	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D31	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D32	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D33	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D34	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D35	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D36	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D37	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
D38	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	R	
DP1	6302W5A007A	DIGITRON	SVM-06SS46	R	
PT1	6010W2P014H	TRANSFORMER,POWER	230/50,12V/170MA	R	
Q01	0TR101509AB	TRANSISTOR	A1015=KTA12660 KEC O TO-92 TP	R	
Q02	0TR101509AB	TRANSISTOR	A1015=KTA12660 KEC O TO-92 TP	R	
Q20	0TR106009AF	TRANSISTOR	KRC 106M KEC	R	
Q30	0TR320209BA	TRANSISTOR	KTC3202-O TP KEC TO92 MWO	R	
Q31	0TR181509AB	TRANSISTOR	KTC1815-Y=KTC3198YTO-92 TP KEC	R	
Q32	0TR181509AB	TRANSISTOR	KTC1815-Y=KTC3198YTO-92 TP KEC	R	
Q33	0TR181509AB	TRANSISTOR	KTC1815-Y=KTC3198YTO-92 TP KEC	R	
Q34	0TR181509AB	TRANSISTOR	KTC1815-Y=KTC3198YTO-92 TP KEC	R	
Q35	0TR181509AB	TRANSISTOR	KTC1815-Y=KTC3198YTO-92 TP KEC	R	
Q50	0TR107009AD	TRANSISTOR	KRC 107M TP KEC	R	

R: SERVICE PARTS

LOC. NO.	PART NO.	DESCRIPTION	SPECIFICATION	SVC	ALTER
Q60	0TR107009AD	TRANSISTOR	KRC 107M TP KEC	R	
R01	0RD1001F608	RESISTOR,FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	R	
R02	0RD2701F608	RESISTOR,FIXED CARBON FILM	2.7K OHM 1/6 W 5.00% TA26	R	
R03	0RD1002F608	RESISTOR,FIXED CARBON FILM	10K OHM 1/6 W 5.00% TA26	R	
R04	0RD1001F608	RESISTOR,FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	R	
R05	0RD1000F608	RESISTOR,FIXED CARBON FILM	100 OHM 1/6 W 5.00% TA26	R	
R06	0RD1003G608	RESISTOR,FIXED CARBON FILM	100K OHM 1/4 W 5.00% TA26	R	
R20	0RD1001G608	RESISTOR,FIXED CARBON FILM	1K OHM 1/4 W 5.00% TA26	R	
R21	0RD2202F608	RESISTOR,FIXED CARBON FILM	22K OHM 1/6 W 5.00% TA26	R	
R22	0RD1001F608	RESISTOR,FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	R	
R25	0RD3901F608	RESISTOR,FIXED CARBON FILM	3.9K OHM 1/6 W 5.00% TA26	R	
R26	0RD1001F608	RESISTOR,FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	R	
R27	0RD3901G608	RESISTOR,FIXED CARBON FILM	3.9K OHM 1/4 W 5.00% TA26	R	
R28	0RD1001G608	RESISTOR,FIXED CARBON FILM	1K OHM 1/4 W 5.00% TA26	R	
R30	0RD1002F608	RESISTOR,FIXED CARBON FILM	10K OHM 1/6 W 5.00% TA26	R	
R31	0RD1002F608	RESISTOR,FIXED CARBON FILM	10K OHM 1/6 W 5.00% TA26	R	
R32	0RD1002F608	RESISTOR,FIXED CARBON FILM	10K OHM 1/6 W 5.00% TA26	R	
R33	0RD1002F608	RESISTOR,FIXED CARBON FILM	10K OHM 1/6 W 5.00% TA26	R	
R34	0RD1002F608	RESISTOR,FIXED CARBON FILM	10K OHM 1/6 W 5.00% TA26	R	
R35	0RD2701G608	RESISTOR,FIXED CARBON FILM	2.7K OHM 1/4 W 5.00% TA26	R	
R36	0RD3901G608	RESISTOR,FIXED CARBON FILM	3.9K OHM 1/4 W 5.00% TA26	R	
R37	0RD5601G608	RESISTOR,FIXED CARBON FILM	5.6K OHM 1/4 W 5.00% TA26	R	
R38	0RD5601G608	RESISTOR,FIXED CARBON FILM	5.6K OHM 1/4 W 5.00% TA26	R	
R39	0RD5601G608	RESISTOR,FIXED CARBON FILM	5.6K OHM 1/4 W 5.00% TA26	R	
R40	0RD1002F608	RESISTOR,FIXED CARBON FILM	10K OHM 1/6 W 5.00% TA26	R	
R41	0RD5601G608	RESISTOR,FIXED CARBON FILM	5.6K OHM 1/4 W 5.00% TA26	R	
R50	0RD1001G608	RESISTOR,FIXED CARBON FILM	1K OHM 1/4 W 5.00% TA26	R	
R51	0RD1000G608	RESISTOR,FIXED CARBON FILM	100 OHM 1/4 W 5.00% TA26	R	
R55	0RD1004F608	RESISTOR,FIXED CARBON FILM	1M OHM 1/6 W 5.00% TA26	R	
R60	0RN1003F408	RESISTOR,FIXED METAL FILM	100K OHM 1/6 W 1.00% TA26	R	
R61	0RN1801F408	RESISTOR,FIXED METAL FILM	1.8K OHM 1/6 W 1.00% TA26	R	
R62	0RD1001F608	RESISTOR,FIXED CARBON FILM	1K OHM 1/6 W 5.00% TA26	R	
R70	0RD3302F608	RESISTOR,FIXED CARBON FILM	33K OHM 1/6 W 5.00% TA26	R	
R71	0RD1202F608	RESISTOR,FIXED CARBON FILM	12K OHM 1/6 W 5.00% TA26	R	
R80	0RD2202F608	RESISTOR,FIXED CARBON FILM	22K OHM 1/6 W 5.00% TA26	R	
R81	0RD2202F608	RESISTOR,FIXED CARBON FILM	22K OHM 1/6 W 5.00% TA26	R	
R82	0RD2202F608	RESISTOR,FIXED CARBON FILM	22K OHM 1/6 W 5.00% TA26	R	
R83	0RD2202F608	RESISTOR,FIXED CARBON FILM	22K OHM 1/6 W 5.00% TA26	R	
R84	0RD2202F608	RESISTOR,FIXED CARBON FILM	22K OHM 1/6 W 5.00% TA26	R	
R85	0RD2202F608	RESISTOR,FIXED CARBON FILM	22K OHM 1/6 W 5.00% TA26	R	
R86	0RD2202F608	RESISTOR,FIXED CARBON FILM	22K OHM 1/6 W 5.00% TA26	R	
R87	0RD2202F608	RESISTOR,FIXED CARBON FILM	22K OHM 1/6 W 5.00% TA26	R	
R88	0RD2202F608	RESISTOR,FIXED CARBON FILM	22K OHM 1/6 W 5.00% TA26	R	
R89	0RD2202F608	RESISTOR,FIXED CARBON FILM	22K OHM 1/6 W 5.00% TA26	R	
R90	0RD1503F608	RESISTOR,FIXED CARBON FILM	150K OHM 1/6 W 5.00% TA26	R	
R91	0RD1503F608	RESISTOR,FIXED CARBON FILM	150K OHM 1/6 W 5.00% TA26	R	
R92	0RD1503F608	RESISTOR,FIXED CARBON FILM	150K OHM 1/6 W 5.00% TA26	R	

R: SERVICE PARTS

LOC. NO.	PART NO.	DESCRIPTION	SPECIFICATION	SVC	ALTER
R93	0RD1503F608	RESISTOR,FIXED CARBON FILM	150K OHM 1/6 W 5.00% TA26	R	
RY1	6920W5A008A	RELAY	DQ1U DAIICHI DC12V DC16.7MA DC	R	6920W2D010A
RY2	6920W2YD04A	RELAY	OZF-S-112LM1P,DC12V,SPST,OEG	R	
RY3	6920W2YD05A	RELAY	YR-PL2-12/CS-1PD,DC12V YOUNG R	R	6920W2YD04A
RY4	6920W2YD05A	RELAY	YR-PL2-12/CS-1PD,DC12V YOUNG R	R	6920W2YD04A
RY8	6920W5A008A	RELAY	DQ1U DAIICHI DC12V DC16.7MA DC	R	6920W2D010A
RY9	6920W5A008A	RELAY	DQ1U DAIICHI DC12V DC16.7MA DC	R	6920W2D010A
U01	0IZZW5A035B	IC	HD404339B46S 64PIN BK 1.5 CONVECTION,MC-	R	
ZD1	0DZ510009AA	DIODE,ZENER	5.1V 1/2W TP	R	
ZD2	0DZ750009AC	DIODE,ZENER	UZ7.5BS TP P-CHANG 26MM 1/2W 7	R	

R: SERVICE PARTS